

THEORY AND PRACTICE IN TENTH-CENTURY MILITARY ADMINISTRATION

Chapters II, 44 and 45 of the *Book of Ceremonies*

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Text and Translation

Commentary:

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[Cap. 44]

**The fitting out and cost and the sum of the pay and of the army
sent against the impious (island of) Crete
with the *patrikios* and *logothetēs tou dromou* Himerios
in the time of the Lord Leo, beloved of Christ¹**

The imperial fleet: 12,000; Rus' 700.

The *stratēgos* of the Kibyrrhaiotai undertook to provide a force of 5,600, and 1,000 reserves: 6,600 in total.

The *stratēgos* of Samos undertook to provide a force of 4,000, and 1,000 reserves: 5,000 in total.

The *stratēgos* of the Aegean Sea² undertook to provide a force of 3,000, and 1,000 reserves: 4,000 in total. All these together: 28,300.

Regarding the cavalry units which should have gone on campaign with the fleet

Thakesian and Macedonian *scholarioi*, 1,037.

From the *thema* of Thrakesion 1,000,³ from the *thema* of Sebastia 1,000 Armenians, from Platanion 500 Armenians, from Prine 500. The total of cavalry: 6,037,⁴ and the total for the fleet and for the cavalry, 34,037.⁵

Regarding the imperial fleet

60 *dromōnes*, having 230 oarsmen and 70 soldiers⁶ each: in total 18,000; 40 *pamphyloī*,⁷ of which 20 have 160 men each, the other 20 have 130 men each; and 700 Rus': in total 5,800. The total is 23,800.⁸

1. In the year 910-911. For a detailed analysis and discussion of the texts which follow, together with discussion of the technical vocabulary, imperial administrative organisation and military structures mentioned, see my detailed commentary *infra*. In fact, the original expedition of 910-911 was probably not to Crete, but against North Syria, but may have intended to return via Crete. See *infra*.

2. For the thematic units mentioned in these lists, see *infra*

3. Cf. 655.15: 3,000.

4. i.e. including the 2,000 Thakesian cavalry not mentioned here.

5. Actually $28,300 + 6,037 = 34,337$. For the 'missing' 2,000 cavalry from Thrakesion, see *supra*.

6. These soldiers were drawn from the imperial *tagmata* or cavalry units, and did not constitute a separate force of 'marines', as is sometimes erroneously stated, just as the soldiers on the warships of the thematic fleets (Kibyrrhaiotai, Samos, Aegean Sea) were drawn from the regular thematic soldiery. See *infra*.

ΚΕΦ. μδ'

'Η γενομένη ἔξοπλισις καὶ ἔξοδος καὶ τὸ ποσδν τῆς βόγας καὶ τοῦ λαοῦ τοῦ
ἀποσταλέντος κατὰ τῆς θεολέστου Κρήτης
μετὰ τοῦ πατρικίου Ἡμερίου καὶ λογοθέτου τοῦ δρόμου
έπι λέοντος τοῦ φιλοχρίστου δεσπότου

5

Τὸ βασιλικοπλόιμον χιλιάδες ἰβ'. 'Ρῶς ψ'.

ἐδέξατο ὁ στρατηγὸς τῶν Κιθυραιωτῶν ἔχειν στρατὸν ,εχ'. καὶ διπλοῦς ,α'.
όμοῦ ,ζχ'.

9 ἐδέξατο ὁ στρατηγὸς τῆς Σάμου ἔχειν στρατὸν ,δ', καὶ διπλοῦς ,α'. ὄμοῦ ,ε'.

Bonn 652 ἐδέξατο ὁ στρατηγὸς | τοῦ Αἰγαίου πελάγους ἔχειν στρατὸν ,γ', καὶ διπλοῦς ,α'.
όμοῦ ,δ'. ὄμοῦ τὸ πᾶν χιλιάδες κῃ' καὶ τ' .

Διὰ τῶν καθαλλαρικῶν τῶν δόφειλόντων ταξειδεύσαι εἰς τὸ πλόιμον

Σχολάριοι Θρακηστιάνοι καὶ Μακεδόνες ,σλζ'.

ἀπὸ τοῦ θέματος τῶν Θρακησίων ,α'. ἀπὸ τοῦ θέματος Σεβαστείας 'Αρμένιοι ,α'.
15 ἀπὸ τὸ Πλατάνιν 'Αρμένιοι φ', ἀπὸ τῆς Πρίνης φ' ὄμοῦ καθαλλαρικοὶ ,ζλζ', καὶ ὄμοῦ τὸ
πᾶν διὰ τε τοῦ πλοῖμου διὰ τε τῶν καθαλλαρικῶν χιλιάδες λδ' λζ'.

Διὰ τοῦ βασιλικοῦ πλοῖμου

20 Δρόμωνες ζ' ἔχοντες ἀνὰ ἀνδρῶν κωπηλατῶν σλ' καὶ ἀνὰ πολεμιστῶν ο' ὄμοῦ
χιλιάδες ιη'. πάμφυλοι μ' ἐξ ὅν οἱ μὲν κ' πάμφυλοι ἀνὰ ἀνδρῶν ρζ', οἱ δὲ ἕτεροι κ' ἀνὰ
ἀνδρῶν ρλ', καὶ 'Ρῶς ψ' ὄμοῦ ,εω'. ὄμοῦ τὸ πᾶν χιλιάδες κγ' καὶ ω'.

11 ὄμοῦ ,δ' ομ. Bonn || 14 σεβαστείας L || 15 Πλατάνινον Bonn || 18 δρόμουνες ut semper Bonn || 20 ο'
scripsi : διοῦ L. Bonn

7. A *dromón* was a heavy warship, a *pamphylos* seems to have been a lighter and swifter warship, although the terminology seems not to have been employed consistently, and changed in application over time. See *infra*; and see AHREWEILER, *Mer*, esp. 408-439; EICKHOFF, *Seekrieg* 81ff., 133-151; H. ANTONIADIS-BIBICOU, *Études d'histoire maritime à Byzance, à propos du Thème des Caravisiens* (Bibliothèque Générale de l'École Pratique des Hautes Études, VI^e section), Paris 1966; R.H. DODD, 'The warships of the Later Roman Empire', *JRS* 38, 1948, 47-53; JENKINS, *De adm. imp. comit. § 51* (195-197); TOYNBEE, *Constantine Porphyrogenitus and his World*, 323-345; see also the section in L. CANNON, *Ships and Seamanship in the Ancient World*, Princeton 1971, 148-154; CHRISTIDES, *Conquest of Crete*, 42-50; PRIOR, *Geography, Technology and War*, 25-57 (commercial ships); 57-86 (warships). See also LEWIS, *Naval Power and Trade*, 73ff., 156ff.

8. Ms. has 23.002, resulting from a copyist's error. See *infra*.

Regarding the *thema* of the Kibyrrhaiotai

15 *dromônes* having 230 oarsmen and 70 soldiers each, totalling 4,500;
 16 *pamphylooi*, 6 with 160 oarsmen, the other 10 with 130 men, totalling 2,260.
 Altogether, 6,760.

Bonn

Regarding the *thema* of Samos

10 *dromônes* having 230 oarsmen and 70 soldiers each, totalling 3,000;
 12 *pamphylooi*, 4 with 160 oarsmen, 8 with 130 men, totalling 1,680.
 Altogether for the *thema* of Samos, 4,680.

Regarding the *thema* of the Aegean Sea

7 *dromônes* having 230 oarsmen and 70 soldiers each, totalling 2,100;
 7 *pamphylooi*, 3 with 160 men, the other 4 with 130 men, totalling 1,000.
 Altogether for the *thema* of the Aegean Sea, 3,100.

Regarding the *thema* of Hellas

10 *dromônes* having 230 oarsmen and 70 soldiers each, totalling 3,000.

Regarding the Mardaites

Mardaites:⁹ army with officers, 4,087, and as a supplement a further 1,000, totalling 5,087.

Altogether the total for the imperial fleet and for the *themata* 112 *dromônes*,¹⁰ 75 *pamphylooi*, 34,000 oarsmen,¹¹ and 7,340 soldiers,¹² and 700 Rus' and 5,087 Mardaites.

Bonn

1.22

The payments for the imperial fleet

Army with officers of 12,502: pay of 15 *kentênaria*, 90 *litrai* and 10 *nomismata*.¹³

Their supplement of 1,000: 5 *nomismata* each, making 69 *litrai*, 32 *nomismata*.

700 Rus': 1 *kentênarion*.

The total for the fleet and the Rus' amounts to 17: 59: 42.¹⁴

9. On these, grouped into Mardaites of the East (who seem to have been associated with maritime activities, especially raiding and piracy against the coastal regions of the Caliphate) and those of the West, see *infra*, and esp. DIETL, *Ethnische Verschiebungen*, 138–158.

10. The actual number given amounts to 102.

11. The total of the figures in the text comes to 34,200.

12. The total of the figures in the text comes to 7,140. On all these figures see *infra*, Table i.

13. Salaries and other payments are usually reckoned in the gold coinage: a *kentênarion* was 100 pounds (*litrai*), in gold coin; there were 72 gold *nomismata* in a *litra*, or pound. The figures given in the manuscript are not always easy to follow, since the copyist uses a variety of abbreviations, sometimes quite arbitrarily, for the same denominations. Thus *nomismata* in particular appears variously as : (printed :) or .. (printed ..) or vv (printed vvv); *miliarésion* appears as \angle (printed \angle).

Διὰ τοῦ θέματος τῶν Κιεβυρραιωτῶν

Δρόμωνες τε ἔχοντες ἀνὰ ἀνδρῶν κωπηλατῶν σλ' καὶ ἀνὰ πολεμιστῶν οὐ· ὁμοῦ χιλιάδες δ' καὶ φ·.

Bonn 653 πάμφυλοι ις' | ἔχοντες οἱ μὲν οὐ ἀνὰ ἀνδρῶν ρξ', οἱ δὲ ἔτεροι ι' ἀνὰ ἀνδρῶν ρλ'· ὁμοῦ
25 χιλιάδες β' καὶ σξ'.

ὁμοῦ τὸ πᾶν χιλιάδες οὐ καὶ ψξ'.

Διὰ τοῦ θέματος τῆς Σάμου

Δρόμωνες ι' ἔχοντες ἀνὰ ἀνδρῶν κωπηλατῶν σλ' καὶ ἀνὰ πολεμιστῶν οὐ· ὁμοῦ ,γ·.

πάμφυλοι ιβ', ἔχοντες οἱ μὲν δ' ἀνὰ ἀνδρῶν κωπηλατῶν ρξ', οἱ δὲ η' ἀνὰ ἀνδρῶν ρλ'·
30 ὁμοῦ ,αχπ'.

ὁμοῦ τὸ πᾶν διὰ τοῦ θέματος τῆς Σάμου ,δχπ'.

Διὰ τοῦ θέματος τοῦ Αίγαίου πελάγους

Δρόμωνες ζ' ἔχοντες ἀνὰ ἀνδρῶν κωπηλατῶν σλ' καὶ ἀνὰ πολεμιστῶν οὐ· ὁμοῦ ,βρ'.

πάμφυλοι ζ' ἔχοντες οἱ μὲν γ' ἀνὰ ἀνδρῶν ρξ', οἱ δὲ ἔτεροι δ' ἀνὰ ἀνδρῶν ρλ'·
35 ὁμοῦ ,α'.

ὁμοῦ τὸ πᾶν διὰ τοῦ θέματος τοῦ Αίγαίου πελάγους ,γρ'.

Διὰ τοῦ θέματος Ἑλλάδος

Bonn 654 Δρόμωνες ι' ἔχοντες ἀνὰ ἀνδρῶν κωπηλατῶν σλ' καὶ ἀνὰ πολεμιστῶν οὐ· ὁμοῦ ,γ'. |

Διὰ τῶν Μαρδαΐτῶν

L 220v 40 Μαρδαΐται, στρατὸς σὺν ἀρχόντων, ,δπζ', || καὶ κατὰ προσθήκην ἔτεροι ,α·
ὁμοῦ ,επζ'.

ὁμοῦ τὸ πᾶν διά τε τοῦ βασιλικοῦ πλοιόμου, διά τε τῶν θεμάτων δρόμωνες ρβ',
πάμφυλοι οε', ἄνδρες κωπηλάται χιλιάδες λδ' <καὶ σ'> καὶ πολεμισταὶ ,ζτμ' καὶ Ῥῶς ψ'
καὶ Μαρδαΐται ,επζ'.

Αἱ δόγαι διὰ τοῦ βασιλικοῦ πλοιόμου

Στρατὸς σὺν ἀρχόντων χιλιάδες ιβ' καὶ φβ', δόγα κεντηνάρια ιε', λίτραι φ : ι'.

προσθήκην αὐτῶν ,α ἀνὰ νομ. ε', γινόμενον λίτραι ξθ', νομ. λβ'.

῾Ρῶς ψ', δόγα κεντηνάριν α'.

ὁμοῦ διὰ τοῦ πλοιόμου καὶ τῶν Ῥῶς δόγα ρρ ιζ', λίτραι νθ' : μβ'.

22 ἔχοντα L Bonn || ἀνα : ιζ' να Bonn || 24 ιζ' : ἀ- Bonn || 32 πελάγο L || 40 συνυρχόντων L || προσθήκην I. ||
42 ρβ' L Bonn || 43 καὶ σ' supplevi || 45 πλοιόμου L || 46 συνύρχουντες ut semper Bonn || 48 κεντηνάριον ut
semper Bonn

14. Henceforth expressed in the order *keniēnarīa, litrai and nomismata*.

Regarding the *thema* of the Kibyrrhaiotai

Army with officers of 6,760: pay of 2: 21: 42 with the reserves.

Regarding the *thema* of Samos

Army with officers of 4,680, and 1,000 from the reserves: pay of 2: 1: 11.

Regarding the *thema* of the Aegean Sea

Army with officers of 3,100, and 1,000 from the reserves: pay of 1: 54: 3.

Regarding the Mardaites of the West

Army with officers of 4,087: pay of 4: 66: 32; their supplement of 1,000 men, at 8 *nn.* each, makes 1: 11: 8.

Altogether the total for the Mardaires of the West: pay of 5: 77: 42.¹⁵

Altogether the total for the imperial fleet, for the Rus', the thematic fleets and the Mardaites of the West: pay of 29: 13: 66.¹⁶

Regarding the pay of the cavalry units

In respect of the Thrakesian and Macedonian *scholarioi*, for 1,037 men: pay of 1: 41: 24.

In respect of the *thema* of Thrakesion, for 3,000 men at 2 *nn.* each: pay of 0: 83: 24.¹⁷

In respect of the *thema* of Sebasteia, for 1,000 men: pay of 1: 13: 24.

In respect of the Platanitai Armenians, for 500 men at 6 *nn.* each: pay of 0: 41: 48.¹⁸

In respect of the Armenians of Prine, for 400 men at 5 *nn.* each: pay of 0: 27: 56.

The total for 2,037 cavalry: pay of 2: 54: 48.¹⁹

And the additional 3,900 men: pay of 1: 52: 56.

The total for the cavalry: pay of 4: 7: 22.

15. Bonn's text mistakenly prints 5: 76: 42, where the Ms. clearly has 5: 77: 42 (although the Latin translation renders the figure accurately as 5: 77: 42: see Bonn 655.8). In fact, the total should be 5: 77: 40. The extra 2 *nn.* appear to reflect a copyist's error.

16. The total figure given in the Ms. is correct, and verifies the emendation of the figure given for the Mardaites (the sum of the separate totals given in the text comes to 29: 13: 68).

17. The Ms. has 0: 80: 24, but $3,000 \times 2 = 6,000 - 72 = 83$ *litrai 24 nomismata*, which I have emended accordingly. That this is a copyist's error is confirmed by the fact that the total for the Thrakesian troops incorporated into the figure for the pay of the additional cavalry, below, assumes the corrected figure as the basis of its calculation. The abbreviation ρ (i.e. *kentenarion*) appears in the text, but without a number, and should be understood as 0. Contrast with the entries for Sebasteia, and the 3,900 supplementary cavalry below, where ρ, for *kentenarion*, is followed by the appropriate numerical symbol. See *infra*.

50 Διὰ τοῦ θέματος τῶν Κιθυρραιωτῶν

Στρατὸς σὺν ἀρχόντων ,εψξ'. ρόγα κεντηνάρια β', λίτραι κα' : μβ' σὺν τοῖς διπλοῖς.

Διὰ τοῦ θέματος τῆς Σάμου

Στρατὸς σὺν ἀρχόντων ,δχπ'. καὶ ἀπὸ τῶν διπλῶν ,α. ρόγα κεντηνάρια β'. λίτραι
Bonn 655 α' : ια'. |

55 Διὰ τοῦ θέματος τοῦ Αἰγαίου πελάγους

Στρατὸς σὺν ἀρχόντων ,γρ' καὶ ἀπὸ τῶν διπλῶν ,α'. ρόγα κεντηνάριν α', λίτραι
νδβ' : γ'.

Διὰ τῶν Μαρδαῖτῶν τῆς δύσεως

Στρατὸς σὺν ἀρχόντων ,δπζ'. ρόγα κεντηνάρια δ', λίτραι ξς' : λβ'. καὶ ἡ προσθήκη
60 ἄνδρῶν ,α ἀνὰ : η', γινόμενον ρ α', λίτραι α' : η'.

όμοιοῦ τὸ πᾶν διὰ τῶν Μαρδαῖτῶν τῆς δύσεως ρόγα ρρ ε'. λίτραι οζ' : μ'.

καὶ ὁμοιοῦ τὸ πᾶν διά τε τοῦ βασιλικοῦ πλοϊμού, τῶν 'Ρῶς, τῶν θεματικῶν πλοϊμῶν
καὶ τῶν Μαρδαῖτῶν τῆς δύσεως ρόγα ρρ κθ'. λίτραι ιγ' : ξς'.

Διὰ τῆς ρόγας τῶν καθαλλαρικῶν

65 Διὰ τῶν σχολαρίων τῶν Θρακησιάνων καὶ Μακεδόνων ὑπὲρ ἀνδρῶν χιλίων λζ'. ρόγα
κεντηνάριν α', λίτραι μα' : κδ'.

Διὰ τοῦ θέματος τῶν Θρακησιών ὑπὲρ ἀνδρῶν ,γ ἀνὰ νομ. β' ρόγα ρ. λίτραι πγ' : κδ'.

Διὰ τοῦ θέματος Σεβαστείας ὑπὲρ ἀνδρῶν ,α ρόγα ρ α', λίτραι ιγ' : κδ'.

Bonn 656 Διὰ τῶν 'Αρμενίων τῶν Πλατανιτῶν ὑπὲρ ἀνδρῶν φ' ἀνὰ νομ. | ζ' ρόγα κεντηνάριν,
τῷ λίτραι μα' : μη'.

Διὰ τῶν 'Αρμενίων Πρίνης ὑπὲρ ἀνδρῶν υ' ἀνὰ νομ. ε' ρόγα κεντηνάριν, λίτραι
κζ' : νς'.

όμοιοῦ καθαλλάριοι ,βλζ'. ρόγα κεντηνάρια β', λίτραι νδ' : μη'.

καὶ οἱ κατὰ προσθήκην ἄνδρες ,γζ', ρόγα ρ α', λίτραι νβ' : νς'.

75 καὶ ὁμοιοῦ διὰ τοῦ καθαλλαρικοῦ ρόγα κεντηνάρια δ', λίτραι ζ' : κβ'.

50 κιθυρρεοτῶν L || 53 λίτραι Bonn || 55 αιγίου I. || 61 οζ' L : οξ' Bonn || μ' emendavi : μβ' L Bonn ||
63 πλοϊμῶν καὶ τῶν Μαρδαῖτῶν τῆς δύσεως rest. Bonn : πλοϊμῶν τῶν Μαρδαῖτῶν καὶ τῆς δύσεως, L || 67 πγ'
emendavi : π' L Bonn || 72 τιοῦτιο κατο προσθήκην schol. in marg. || 73 μη' emendavi : λη' I Bonn

18. The Ms. includes the word *kentēnarion*, but without an associated figure, and is thus read as 0 *kentēnaria*.

19. i.e. the 1,037 *scholarior* and the 1,000 men from Sebasteia: 1: 41: 24 + 1: 13: 24 = 2: 54: 48. The Ms. has 2: 54: 38, which I have emended as a copyist's mistake.

Regarding mobilisation pay²⁰

In respect of the fleets of the 3 *themata* of Kibyrrhaiotai, Samos and the Aegean Sea, for 3,000 men at 2 *nn.* each: 83: 24.

In respect of the Mardaites of the West, 3 *toumarchai* at 36 *nn.* each, 42 *drouggarioi* at 12 *nn.* each, 42 *komêtes* at 6 *nn.* each, 5,000 soldiers at 4 *nn.* each, making altogether 2: 99: 56.²¹

In respect of the Armenians of the *thema* of Sebasteia, 5 *toumarchai* at 12 *nn.* each, 10 *drouggarioi* at 6 *nn.* each, 8 *komêtes* at 5 *nn.* each, 965 soldiers at 4 *nn.* each, making altogether 55: 60.

In respect of the Armenians of Prine, 500 men at 2 *nn.* each, making 13:64.

Altogether for the mobilisation pay: 4: 52: 60.²²

Note that the *stratēgos* of the Kibyrrhaiotai and the *katepanō* of the Mardaites of Attalia²³ undertook that, on the one hand, the *stratēgos* would prepare two *chelandia* from the units of the *toumarchai*, while on the other the *katepanō* of the Mardaites would prepare galleys,²⁴ and during the month of March would despatch them to Syria, so that they might bring back a report and a true account²⁵ regarding everything prepared and done there.

Note that the *prōtospatharios* and *archôn* of Cyprus, Leo Symbatikes, undertook to despatch vigilant scouts to the Gulf of Tarsos and to the region of *ta Stomia* (the Cilician plain),²⁶ as well as to Tripolis and Laodikeia, so that from both regions they might bring back accounts as to whether the Saracens were doing anything by way of training.

Note that the *stratēgos* of Thessaloniki undertook to produce 200,000 arrows and 3,000 *menaulia*,²⁷ and as many shields as could be managed. Note that the *kritēs* of Hellas undertook to produce 1,000 *menaulia*, which he completed. He undertook to produce a further batch, and have them taken down to wherever had been agreed.

Note that the *archôn* of Chrêpos in the *thema* of Hellas undertook to produce 200,000 arrows and 3,000 *menaulia*; likewise the *stratēgos* of Nikopolis and the (*stratēgos*) of the Peloponnese.

Note that the *prōtospatharios* Theodoros Pagkrates undertook to travel to the Anatolikoi, and to enrol the Platiniatai, and from them and from others of the *thema* to

20. See *infra*.

21. The correct sum should be 2: 89: 56, i.e. the Ms. has 10 *litrai* too many.

22. In fact, the correct total should be 4: 42: 60, but 10 *litrai* extra, attributed to the *prochreion* of the Mardaites (see above) is included here also.

23. On whom see *infra*.

24. Not in the sense of oared warships: *galaia* (also *galea*) referred to a light, manoeuvrable vessel with a single bank of oars, often associated with reconnaissance or piracy. See AIRW 111 R, *Mer.* 414.

25. *Apokrisis* normally referred to a message, a reply or an answer; an *apokrisiaros* was a messenger, ambassador or representative (see ODB, 136). In this case, “report” (i.e. the response from Byzantine spies and scouts) seems appropriate. *Mandator* has several meanings, including command or order (as well as a technical legal sense). *Mandator*, as well as being an imperial title, continued to have a functional significance, referring to

Διὰ τοῦ προχρέου

L22r Διὰ τῶν πλοιάμων τῶν γ' θεμάτων τῶν τε Κιβυρραιωτῶν, τῆς Σάμου καὶ || τοῦ Αἰγαίου πελάγους ὑπὲρ ἀνδρῶν, γ ἀνὰ : β', λίτραι πγ' : κδ'.

Διὰ τῶν Μαρδαῖτῶν τῆς δύσεως τουρμαρχῶν γ' ἀνὰ : λς', δρουγγαρίων μβ' ἀνὰ : ιβ',
80 κομήτων μβ' ἀνὰ : ζ', στρατιωτῶν ε ἀνὰ : δ', γινόμενα ἀμφότερα κεντηνάρια β', λίτραι φθ' : νς'.

Διὰ τῶν Ἀρμενίων τοῦ θέματος Σεβαστείας τουρμαρχῶν ε' ἀνὰ : ιβ', δρουγγαρίων
ι' ἀνὰ : ζ', κομήτων η' ἀνὰ : ε', στρατιωτῶν ζε' ἀνὰ : δ', γινόμενα ἀμφότερα λίτραι νε' : ξ'.

85 Διὰ τῶν Ἀρμενίων Πρίνης ἄνδρες φ' ἀνὰ : β', γινόμενα λίτραι ιγ' : ξδ'.
καὶ ὅμοῦ διὰ τοῦ ἀμφοτέρου προχρέου ρρ δ', λίτραι νβ' : ξ'.

Bonn 65r ίστεον, | ὅτι ἐδέξατο δ στρατηγὸς τῶν Κιβυρραιωτῶν καὶ ὁ κατεπάνω τῶν Μαρδαῖτῶν Ἀτταλίας, ἵνα ὁ μὲν στρατηγὸς εὐτρεπίσῃ χελάνδια δύο ἀπὸ τῶν οὐσιῶν τῶν τουρμαρχῶν, ὁ δὲ κατεπάνω τῶν Μαρδαῖτῶν εὐτρεπίσῃ γαλέας, καὶ διὰ Μαρτίου μηνὸς 90 ἀποστείλωσι αὐτὰ εἰς Συρίαν, ἵνα περὶ πάντων τῶν ἔκεισε μελετωμένων καὶ πραττομένων ἐνέγκωσιν αὐτῷ ἀπόκρισιν καὶ ἀληθὲς μανδᾶτον.

ίστεον, ὅτι ἐδέξατο δ πρωτοσπαθάριος Λέων καὶ ἄρχων Κύπρου, ὁ τοῦ Συμβατίκη, ἀποστείλαι ὥσφιθεὶς κατασκόπους εἰς τὸν κόλπον τῆς Ταρσοῦ καὶ εἰς τὰ Στόμια, ἔπι δὲ καὶ πρὸς Τρίπολιν καὶ Λαοδίκειαν, ἵνα ἐκ τῶν ἀμφοτέρων μερῶν ἐνέγκωσιν μανδᾶτα,
95 εἴ τι διὰ μελέτης ἔχουσιν οἱ Σαρακηνοί.

ίστεον, ὅτι ἐδέξατο δ στρατηγὸς Θεσσαλονίκης τοῦ καμεῖν σαγίτας χιλιάδας σ' καὶ μεναύλια χιλιάδας γ' καὶ σκουτάρια, ὅσα δυνηθῇ. ίστεον, ὅτι ἐδέξατο δ κριτῆς Ἑλλάδος καμεῖν μεναύλια ,α, ἀπέρ καὶ ἐτελείωσεν. ἐδέξατο δὲ καμεῖν καὶ ἕτερα καὶ καταγγιάσαι αὐτὰ ἐν οἷς ἀν δέξηται.

100 ίστεον, ὅτι ἐδέξατο δ ἄρχων Χρήπου ἐν τῷ θέματι Ἑλλάδος καμεῖν σαγίτας χιλιάδας σ' καὶ μεναύλια χιλιάδας γ'. ὡσαύτως καὶ ὁ στρατηγὸς Νικοπόλεως καὶ ὁ Πελοποννήσου.

ίστεον, ὅτι ἐδέξατο δ πρωτοσπαθάριος Θεόδωρος ὁ τοῦ Παγκράτη ἀπελθεῖν εἰς
Bonn 658 Ἀνατολικὸν καὶ καταγράψασθαι τοὺς Πλατινιάτας, καὶ δι' αὐτῶν καὶ δι' ἑτέρων τῶν

79 τουρμάρχων L || 82 τῶν Ἀρμενίων τοῦ θέματος σοπεῖ : τῶν Ἀρμενίων θέματων I Bonn || 84 ε επεν-
davi : ζ' L Bonn || 89 εὐτρεπίσῃ L || γαλαίας L Bonn || 90 Συρίαν Bonn : συρια L || 94 λαοδίκιαν L || μυνδατο
L || 101 ὡς αὐτὸς L || πελοποννήσου L || 103 ἀνατολικούς L

a variety of officials, such as messengers despatched on particular missions. By derivation, their account might also be referred to as a *mandaton*. See *ODB*, 1281.

26. On Leo, see *infra* with literature. For *ta Stomia*, see *TIB* 2, 129; 5, 420; *VASILIEV*, *Byzance et les Arabes*, ii, 1, 205 n. 5. Identified with the mouths of the rivers flowing from the Taurus down through Cilicia into the Mediterranean. *Ta Stomia* — the mouths — can be translated by the Arabic term al-Thughūr, and may thus refer to the region of mountain passes along the Taurus - Anti-Taurus chain. Since this is a sea-borne operation, however, it is likely that the term could also be used of the Cilician coastal region (the 'mouths' of the rivers), or indeed imply both meanings; the whole region beyond the Byzantine frontier which was used as a starting point for regular Muslim raids and expeditions into imperial territory.

27. Heavy infantry spears/pikes: see *infra*.

assemble 500 selected men skilled in archery, especially if any of them are competent horsemen, whether from the officers or the *scholarioi*. If the *scholarioi* have their pay in full, let them equip themselves from their own resources with the cavalry panoply. But if they are short in respect of their pay, let them take animals from the *mētata*, or by personal impositions within the *thema* of Anatolikon.

Concerning what should have been prepared in the *thema* of Thrakesion, that is to say

20,000 (*modioi*) of barley²⁸, 40,000 (*modioi*) each of wheat, biscuit²⁹ and flour, 30,000 measures of wine, 10,000 animals for slaughter;³⁰

and concerning the preparation of 10,000 measures of flax fibre for the *propyra*³¹ and the caulking, let them be held at Phygela, and 6,000 nails for the nailing of the *dromōnes*: the *prōtonotarios* of the Thrakesion *thema* undertook these items; the (official) for Limnogalakros likewise undertook to assist him with the wine.

Concerning the preparation of 30,000 five-finger (9.75cm)³² nails for the decking of the *dromōnes*, for the gangplanks and stalls,³³ let them also be taken down to Phygela: the *stratēgos* of Samos undertook to obtain the expenses for these items from the *prōtonotarios*.

Concerning the preparation of 3,000 single-headed³⁴ claw-nails for "tortoises"/ sheds, ladders and other jobs and the 3,000 handspan nails (23.4cm)³⁵: the *stratēgos* of Samos undertook this.³⁶

Concerning the preparation of 4,000 six-finger (11.7cm), 4,000 five-finger (9.75cm) and 4,000 four-finger (7.8cm) nails for the derricks³⁷ and the walkways and other needs: the *stratēgos* of Samos undertook this.

Concerning the undertaking by an imperial official present in the Anatolikon region to prepare 20,000 *modioi* of barley and 60,000 *modioi* of hardtack and wheat and flour from the Kibyrrhaiotai and Anatolikon, and let them be brought down from the Anatolikon region to Attalia, rather than going off to Kalon Oros.³⁸

Concerning the purchase by the *prōtonotarios* of the Kibyrrhaiotai of 60,000 small nails for fastening the hides.

28. The *modios* was the standard measure of quantity for grains and pulses, as well as being employed as a measure of area. The exact volume of the *modios* remains disputed, the more so since there are several different *modios* employed for functionally and contextually diverse purposes. See *infra* and nn. 222-226 for literature and discussion.

29. For *paxamation* see KAHLANI, 'Sprache', at col. 396-397; HALDON, *infra*.

30. For wine and animals for slaughter on the expedition, see *Three Treatises* (ed. Haldon), [C] 141; 146 and p. 202.

31. On linen production and flax: *ODB*, 1231. The *propyra* were probably the braziers or hearths employed to heat the oil used in the liquid fire projectors: see J. E. HALDON, M. BYRNE, 'A possible solution to the problem of Greek fire', *BZ* 70 (1977) 91-99, see 93, and nn. 6, 8.

32. See SCHUBACH, *Metrologic*, 16. The *daktylos* = 1.95cm.

33. For these terms, see HALDON, *infra*.

34. *stoma* could also refer to the foremost aspect of an object, the face, front, edge or point of a sword, for

ἐκ τοῦ θέματος συστῆσαι ἄνδρας φέγγελεγμένους καὶ πρὸς τὸ τοξεύειν ἐπιτηδείους, καὶ
105 ἔαν διν ἐξ αὐτῶν τινες ἐπιτήδειοι καθαλλάριοι. εἴτε ἐκ τῶν ἀρχόντων, εἴτε ἐκ τῶν
1221: σχολαρίων. || εἰ μὲν καταπλήρης ἔχωσιν τὴν ὥραν αὐτῶν οἱ σχολάριοι, ἵνα ἐξοπλισθῶσιν
ἐκ τῶν ἰδίων καθαλλαρικὴν ἐξόπλισιν· εἰ δὲ ἐλλιπεῖς εἰσιν πρὸς τὴν ὥραν, ἵνα λάθωσιν
ἀπὸ τῶν μητάτων ἄλογα, ἢ καὶ ἀπὸ ἐκθέσεως μονοπροσώπων ἐν τῷ θέματι τῶν
'Ανατολικῶν.

110 περὶ τῶν δφειλόντων ἐτοιμασθῆναι εἰς Θρακησίους, ἡγουν

τῶν καὶ χιλιάδων τοῦ κριθαρίου καὶ περὶ τῶν μέρων χιλιάδων τοῦ τε σίτου καὶ τοῦ
παξαματίου καὶ ἀρευρίου καὶ περὶ τοῦ οἶνου τῶν λέπτων καὶ περὶ τῶν σφακτῶν τῶν
ιχιλιάδων

καὶ περὶ τοῦ ἐτοιμασθῆναι λινάριον λόγῳ τῶν προπύρων καὶ καλαφατήσεως
115 χιλιάδας 1'. ἵνα ἔχῃ εἰς τὰ Φύγελα, καὶ καρφία χιλιάδας 5' λόγῳ τῆς ἡλώσεως τῶν
δρομάνων. ἐδέξατο περὶ τούτων ὁ πρωτονοτάριος τῶν Θρακησίων. ἐδέξατο καὶ ὁ
Λιμνογάλακτος. ἵνα συνδράμῃ αὐτὸν εἰς τὸν οἶνον.

περὶ τοῦ ἐτοιμασθῆναι καρφίον πενταδακτυλαῖον λόγῳ τῆς στρώσεως τῶν
δρομάνων, εἰς τὰς σκάλας καὶ εἰς τὰς πάθνας χιλιάδας 1', καὶ κατέλθωσιν εἰς τὰ
120 Φύγελα. ἐδέξατο δὲ περὶ τούτου ὁ στρατηγὸς τῆς Σάμου τοῦ λαμβάνειν ἔξοδον παρὰ τοῦ
πρωτονοτάριον.

Bonn 659 περὶ τοῦ ἐτοιμασθῆναι καρφίον ἀρπάγιον κοινοστοιχαῖον λόγῳ χελωνῶν καὶ σκαλῶν
καὶ λοιπῶν κατέργων χιλιάδας 1', καὶ σπιθαμαιαῖον χιλιάδας 1'. ἐδέξατο δὲ περὶ τούτου ὁ
στρατηγὸς τῆς Σάμου.

125 περὶ τοῦ ἐτοιμασθῆναι καρφίον ἔξαδακτυλαῖον χιλιάδας 1' καὶ πενταδακτυλαῖον
χιλιάδας 1' καὶ τετραδακτυλαῖον <χιλιάδας> 1' διὰ τὰς γερακαραίας καὶ τοὺς διαπάτους
καὶ λοιπὰς χρείας. ἐδέξατο δὲ περὶ τούτου ὁ στρατηγὸς τῆς Σάμου.

περὶ τοῦ δέξασθαι τίνα βασιλικὸν τὸν ὄντα εἰς Ἀνατολικούς ἐτοιμάσαι κριθάριον
χιλιάδας 1' καὶ παξαμάτια καὶ σίτον καὶ ἀρεύριν χιλιάδας 1' διὰ τῶν Κιθυρραιωτῶν καὶ
130 τοῦ Ἀνατολικοῦ, καὶ ἵνα καταγωγιασθῶσιν ἀπὸ Ἀνατολικούς εἰς Ἀτταλίαν ἀντὶ τοῦ
ἀπερχομένου εἰς τὸ Καλὸν Ὁρος.

περὶ τοῦ ἀγοράσαι τὸν πρωτονοτάριον τῶν Κιθυρραιωτῶν καρφίον μικρὸν λόγῳ τῆς
παρηλώσεως τῶν βυρσαρίων χιλιάδας 1'.

106 κατα πληρες L Bonn || ωσχολάριοι L || 107 ἐξόπλησιν L || 115 ἕχη L || καρφία Bonn (conii. Reiske) : συμβαίνει
L || 116 δρομονῶν L || 117 συνδράμει L || 118 πενταδακτυλον L || 119 παθναῖς L || 122 καρφίο ἀρπαγιῶν
κοινοστοιχίο ... χελώνων L || 123 λιτιάδαι L || σπιθαμαιαῖον L || 125 καρφίο L || 126 χιλιάδαι, supplevi ||
128 κριθάριον L κριθην Bonn || 129 ὄρευνιον Bonn || 132 καρφίο L || 133 παρηλεσιώς L

example, as well as the top of something: see LSJ s.v. *stoma* III; I.D. STAMATAKOS, Λεξικον τῆς Νεοελληνιστικής γλώσσης, Athens, 1971, III, 2598.

35. SCHILLER, Metrolologie, 19-20.

36. See *infra*.

37. See *infra*. An alternative suggested by Ann Moffat is to emend *gerakaraia* to *gyrokerata*, meaning swivelling yard, although in the context this seems less probable.

38. Modern Alanya on the southern Turkish coast.

Concerning the skiffs made for the *dromônia*: for the courier, let him be despatched from the *hetaireia*³⁹ with an order for the *katepanô*, who should give him a *prôtokagkellarios* and full support, and let him then hold the Korphitianoï of Herakleia⁴⁰ and take four sailors for each skiff. He should send them off (the skiffs) without delay through the *prôtokagkellarios*. Each skiff should have its mast, yard and four oars, and a steering-oar. In addition, 6 8-oared pinnaces.⁴¹

Concerning the caltrops: let the *koitônîtes* Theodoretos be asked what became of them; likewise regarding last year's sacks and the marrocks and mallets, rings, bolts, shackles and rams, he should despatch his notary to us with the register of everything.

Concerning the *parathalassîtes* having been ordered to equip 1,200 men through joint contributions (from the inhabitants of the City)⁴².

Note that the *Kibyrrhaiôtës*,⁴³ the *katepanô* of the Mardaites of Attalia and Leo Symbatikes undertook to maintain security and a sharp look-out, and to permit no unknown person to go off to Syria, and through them for information from the Roman state to be carried to Syria.

Regarding the forces sent on the expedition to Lagobardia under the emperor lord Romanus in the 8th indiction⁴⁴

The *chelandia* of the imperial fleet which went down with the *prôtospatherios* Epiphanios in indiction 8: I

The *chelandia* which went down beforehand with the *patrikios* Kosmas in indiction 7: 11

Seven Rus' vessels with 415 men

From the cavalry: Thrakesians and Macedonians: 220 officers, 98 *scholarioi*, new *scholarioi*: 608

From the active troops of the foreigners: from the Great Hetaireia, 31 men; from the Middle Hetaireia, 46 men; Pharganoi, 45 men; Chazars, 47

39. This sentence is unclear. The usual term for a courier is *diatrechonta*. The *hetaireia* in question is not the imperial *hetaireia* based at Constantinople, but rather the company of guards and attendants attached to a thematic *stratègos* (cf. OIKONOMIDES, *Listes*, 341), in this case, we may assume, the commander of the Kibyrrhaiotai, since the Mardaitai of Attalia were drawn from areas within that *thema*, although their commander, the *katepanô*, was not subordinate to the *stratègos*, which sometimes led to conflict: see *De adm. imp.* § 50.169-256; commentary, 192f.

40. Probably Herakleia at the head of the Gulf of Latmos (now on mod. Lake Bafrà), within easy reach of Samos. See *infra*. The Korphytianoï were the sailors from that region, not from Kerkyra/Corphu.

41. *Sandalion* appears in the seventh century, denoting thereafter a shallow-draught or flat-bottomed fishing boat (so named because of its similarity to a sandal): see KAHLNE, 'Sprache', col. 413-414. The term *haladria* derives from *halenô/haleutikos*, associated with fishing, cf. mG. *haliatika*. I use the term pinnace somewhat anachronistically as the most suitable word here, since it is an English term which, although referring to larger masted vessels until the seventeenth century, came to refer thereafter to a small boat with between 8 and 12 oars, which could also carry a small mast and fore-and-aft sail. See W.F. MAY, *The boats of men of war*. Maritime Monographs and Reports 15, London 1974, 4-5.

134 περὶ τῶν σανδαλίων τῶν καμοθέντων λόγῳ τῶν δρομωνίων εἰς τὸν τρέχοντα, ἵνα
 L 222r ἀποσταλῇ τῆς || ἐταιρείας μετὰ κελεύσεως πρὸς τὸν κατεπάνω, καὶ δώσῃ αὐτὸν
 πρωτοκαγκελλάριον καὶ πᾶσαν συνδρομήν, καὶ κρατήσῃ τοὺς Κορφιτιάνους Ἡρακλείας,
 καὶ ἐπάρῃ ναύτας ὑπὲρ ἐκάστου σανδαλίου δ'. ἀποστείλῃ δὲ αὐτὰ διὰ συντομίας διὰ τοῦ
 Bonn 660 πρωτοκαγκελλαρίου, ἵνα δὲ ἔχῃ ἔκαστον σανδάλιον τὸ κατάρτιον αὐτοῦ καὶ τὸ
 κερατάριον καὶ ἀνὰ κωπίων δ' καὶ τὸ παρακώπιον. ἔτι δὲ καὶ | ἀλιάδιας' ὁκτάκωπα.

140 περὶ τῶν τριθολίων, ἵνα ἐρωτηθῇ ὁ κοιτωνίτης Θεοδώρητος, τί ἐγένοντο· ὅμοιῶς καὶ
 περὶ τῶν σακκίων τῶν περσυνῶν καὶ τῶν τζαπίων καὶ τζόκων, κρικελλίων τε καὶ
 δακτυλίων καὶ φελλίων καὶ κριῶν, ἵνα ἀποστείλῃ τὸν νοτάριον αὐτοῦ μετὰ τὴν
 καταγραφὴν πάντων πρὸς ἡμᾶς.

145 περὶ τοῦ ὄρισθηναι τὸν παραθαλασσίτην, ἵνα ἐξοπλίσῃ ἀπὸ συνδόσεως τῶν ἀστικῶν
 στρατιώτας, ας'.

ἵστεον, ὅτι ἐδέξατο ὁ τε Κιευρραιώτης καὶ ὁ κατεπάνω τῶν Μαρδαΐτῶν Ἀτταλίας
 καὶ ὁ Λέων τοῦ Συμβατίκη, ἵνα ἔχωσιν ἀσφάλειαν καὶ ἀκρίτειν, καὶ μὴ παραχωρῶσιν
 τινα τῶν ἀγνωρίστων πρὸς Συρίαν ἀπελθεῖν, καὶ δι' αὐτῶν ἀποκομισθῆναι εἰς Συρίαν τὰ
 ἀπὸ Ρωμανίας μανδᾶτα.

150 Διὰ τῶν ἐν Λαγοθαρδίᾳ ταξειδευσάντων
 ἐπὶ τοῦ κυροῦ Ρωμανοῦ τοῦ βασιλέως εἰς Ἰνδ. η'

Τὰ κατελθόντα μετὰ τοῦ πρωτοσπαθαρίου Ἐπιφανίου βασιλικοπλόιμα χελάνδια εἰς
 Ἰνδ. η', ια'

τὰ προκατελθόντα μετὰ τοῦ πατρικίου Κοσμᾶ χελάνδια εἰς Ἰνδ. ζ', ια'

155 'Ρῶς καράδια ζ' ἔχοντα ἄνδρας υἱε'.

Διὰ τῶν καθαλλαρικῶν Θρακησιάνοι καὶ Μακεδόνες ἄρχοντες σβ', σχολάριοι φη',
 νέοι σχολάριοι χη'.

διὰ τῶν χαρακιωτῶν τῶν ἐθνικῶν τῆς μεγάλης ἐταιρείας ἄνδρες λα': τῆς μέσης

Bonn 661 ἐταιρείας ἄνδρες με'. Φαργάνοι ἄνδρες με'. Χάζαροι με'.

134 δρομονίων L Bonn || 135 ἀποσταλεῖ L || δώσει I. || 136 συνδρομεῖν L || κρατήσει L || 137 ἀποστείλει L || 138 ἔχει L || 144 τῶν ἀστικῶν σοπιεῖ : τῶν ἀστῶν σοπ. Reiske τῶν μῆτῶν L Bonn || 145 οσ' Bonn || 146 μαρδαΐτων I. || 147 ἀσφάλεια L || 148 παραχωρῶσιν τινα L || συρία L || 151 ἴνδικτίονα Bonn || 152 βασιλοπλόιμα Bonn || 153 ἴνδικτίονα Bonn

42. See REISKE, *De cer.*, II, 780, who conjectures τῶν ἀστῶν, probably correctly instead of τῶν μῆτῶν thus making the text refer to those from the harbour regions in and around Constantinople, for whom the *parathalassitae* had a judicial/administrative responsibility: see ΟΙΚΟΝΟΜΟΣ, *Listes*, 321 and n. 195. If the αὐτῶν is a copyist's error, which is very likely, an even better emendation would be τῶν ἀστικῶν, miscopied from an original abbreviation. Given the principles of *synopsis*, by which groups of liable tax-payers were jointly responsible for equipping and providing a soldier, this emendation makes better sense than the ungrammatical original form in which the text has been transmitted. See HALDON, 'Military Service', 26ff.

43. i.e. the *stratēgos*.

44. In the year 935 AD. The *thema* of Laggobardia, originally established as a *tourma* of the *thema* of Kephallenia (from ca. 876), was placed under a *stratēgos* ca. 892. See ΟΙΚΟΝΟΜΟΣ, *Listes*, 351-352.

From the imperials: 71 men; from the *Arithmos* units based in the City, 35 men; from the new prisoners, 79; 11 men from Mosul; 18 men from Panormos; Turks, 84 men; Armenians who volunteered to go out with the artillerymen, 36 men

Altogether, 1,453 cavalry.

The items sent to the king of Italy under the Lord Romanus,
should he set out and subdue the rebellious princes,
Landulf and Atenulf, his brother, and Guaimar and Guaifar, his brother,
and all the Lagobards from the *thema* of Lagobardia who were in revolt,
and hand over the fortresses to the *stratēgos* of Lagobardia⁴⁵

One *kentēnarion* in cash, ten undergarments, one onyx wine-cup, seventeen glass lamps,⁴⁶ thirty packers of incense, five hundred (packets) of ointments. For the seven *komêtēs* of the same king two undergarments each; for the six bishops of the same king six all-yellow *skaramaggia*.⁴⁷ For the *komê*s and *markêsiōs*⁴⁸ of the said king, who neighbours the *thema* of Lagobardia, five *skaramaggia*, one all-yellow, one all-rose, one all-green and one all-white, altogether nine *skaramaggia*. Four undergarments, three undergarments of lesser value, altogether seven. Three gilded silver objects.

If the king himself should not appear, he should send a force, and they should subdue and destroy those in revolt and hand over the fortresses to the *stratēgos* of Lagobardia, while the latter should likewise send through them to the king all the above-mentioned items.

For expenditure on this same campaign to Lagobardia there were given to the *protôspatharios* Epiphanios six *skaramaggia* of various colours and patterns, thirty 8-nomismata, twenty striped and twenty purple undergarments. Of these, the *protôspatharios* Epiphanios disbursed two *skaramaggia*, seventeen 8-nomismata, twelve striped and fourteen purple undergarments. On his return he brought back the superfluous four *skaramaggia*, thirteen 8-nomismata, eight striped and six purple undergarments.⁴⁹

Note that the thematic fleets were paid as follows upon their arrival on Crete⁵⁰

the *tourmarchai*, 30 nn. each, the *komêtēs* of the tent, 20 nn. each, the *chartoularioi* of the *themata*, 20 nn. each, the *domestikoi* of the *themata*, 20 nn. each, the *drouggarioi*,

45. Landulf and Atenulf II were joint rulers of Beneventum/Capua from 912. Guaimar II and Guaifer were rulers of Salerno. For these rebellions/wars, see FALKENHAUSEN, *Untersuchungen*, 78ff., 164. These principalities were, of course, quite independent, and only East Roman political ideology demanded that they be seen, from an imperial perspective which still saw Italy as 'Roman', i.e. Byzantine, as in rebellion. It was the intervention in 935-936 of Hugh of Provence, king of Italy, which put an end to Lombard attacks on the Byzantine territories.

46. See J.O. RÖNNOVSKY, 'Lamps for St. Eugenios: a note on Byzantine glass', *Eranos* 92, 1994, 52-59.

47. For the types of clothing and garment mentioned here, see *Three Treatises*, [C] 225ff., and comm. with further literature, 216f. Terms such as *diktrina* or *diaphra* meant either twice-dyed, or of two shades of the same colour. For further discussion of technical terms in respect of silks, dyes and weaving, see A. MELLEHUS, 'The Byzantine silk-industry. Lopez and beyond', *Journal of Medieval History* 19 (1993) 1-67, see 50ff.; FAD., *Byzantine silk weaving AD 400 to AD 1200*, Vienna 1997, esp. 27ff.

160 ἀπὸ τῶν βασιλικῶν ἄνδρες οἱ· ἀπὸ τοῦ ἀριθμοῦ τῶν ἐν τῇ πόλει ἄνδρες λε· ἀπὸ τῶν νέων σίχμαλώτων οἱ· Μουσουλινοὶ ἄνδρες ια· Πανορμῖται ἄνδρες ιή· Τούρκοι ἄνδρες πδ· Ἀρμένιοι οἱ ἀπὸ βουλῆς ἐξελθόντες σὺν τῶν μαγγαναρίων ἄνδρες λς·
ὅμοι καθαλάριοι ἄνδρες .αυνγ'.

165 Τὰ ἀποσταλέντα τὸν δῆγα Ἰταλίας ἐπὶ Ῥωμανοῦ δεσπότου,
εἰ ἄρα ἐξέλθη καὶ καταπολεμήσῃ τοὺς ἀντάρτας πρίγκιπας,
τόν τε Λανδούφον καὶ Ἀτενούλφον, τὸν ἀδελφὸν αὐτοῦ,
καὶ Γοήμαριν καὶ Γοηφέριν, τὸν ἀδελφὸν αὐτοῦ,
καὶ πάντας τοὺς ἀποστατήσαντας Λαγοθάρδους
169 ἀπὸ τοῦ θέματος Λαγοθαρδίας,
καὶ παραδώσῃ || τὰ κάστρα τῷ στρατηγῷ Λαγοθαρδίας

173 Λογάριν ρ α·, ἐσωφόρια ι·, ποτήριον ὀνυχίτου α·, ύελια κλεοπτ. ιζ·, θυμίαμα θυλάκια λ·, ἀλειπτὰ φ·, τοὺς ζ κόμητας τοῦ αὐτοῦ δηγὸς ὀνὰ ἐσωφορίων β·, τοῖς ζ ἐπισκόποις τοῦ αὐτοῦ δηγὸς σκαραμάγγια δικάτρινα ζ·, λόγῳ τοῦ κόμητος καὶ μαρκησίου τοῦ αὐτοῦ δηγὸς τοῦ πλησιάζοντος τὸ θέμα Λαγοθαρδίας σκαραμάγγια ε·, δικάτρινον α·, διφόδινον γ·, δικένετον α·, δίασπρον α· ὅμοι σκαραμάγγια θ·, ἐσωφόρια δ·, ἐσωφόρια λεπτόζηλα γ· ὅμοι ζ·, ἔργα ἀργυρᾶ διάχρυσα γ·.

Bonn 662 εἰ δὲ καὶ αὐτὸς ὁ δῆγος οὐ παραγένηται, ἀποστείλῃ δὲ λαὸν, καὶ καταπολεμήσωσι καὶ ἀφανίσωσι τοὺς ἀποστάτας καὶ παραδώσωσι τὰ κάστρα τῷ στρατηγῷ Λαγοθαρδίας, ὕστατως δι' αὐτῶν ἀποστείλῃ τὰ προρρηθέντα πάντα πρὸς τὸν δῆγα.

180 ἐδόθησαν τῷ πρωτοσπαθαρίῳ Ἐπιφανίῳ λόγῳ ἐξόδου τοῦ αὐτοῦ ταξειδίου τῆς Λαγοθαρδίας σκαραμάγγια διαφόρων χροιῶν καὶ ἑξεμπλίων ζ·, ἐσωφόρια ὀκτάλια λ·, λωρωτὰ κ·, ἀληθινὰ κ·, ἐξ αὐτῶν ἐξαδίαστεν ὁ πρωτοσπαθαρίος Ἐπιφάνιος σκαραμάγγια β·, ἐσωφόρια ὀκτάλια ιζ·, λωρωτὰ ιβ·, ἀληθινὰ ιδ·, μετὰ δὲ τὸ ἀναδραμεῖν αὐτὸν εἰσεκόμισεν τὰ περισπενίσαντα σκαραμάγγια δ·, ἐσωφόρια ὀκτάλια ιγ·, λωρωτὰ η·.

185 ἀληθινὰ ζ·.

Ιστέον, δτι τὰ θεματικὰ πλόëμα ἐν τῇ κατὰ Κρήτης ἀφίξει ἐρογεύθησαν οὕτως·

οἱ τουρμάρχαι ὀνὰ : λ·, οἱ κόμητες τῆς κόρτης ὀνὰ : κ·, οἱ χαρτουλάριοι τῶν θεμάτων ὀνὰ : α·, οἱ δομέστικοι τῶν θεμάτων ὀνὰ : κ·, οἱ δρουγγάριοι ὀνὰ : κ·, οἱ κόμητες ὀνὰ :

161 πανορμῆται Ι || 164 ἡτταλεῖαι Ι Ἰτταλιαι, Bonn || 165 ἵνταρται Bonn || 171 λογάριον Bonn ||
173 δίκτριναι Bonn || 177 ἀποστείλει Ι || 179 ὡς αὐτοῦ Ι || δισ τῶν Ι || ὑποστείλει Ι || 182 ἀληθιναι Ι ||
183 ἀληθιναι Ι || 184 εἰσεκόμησεν Ι || περισπενίσανται Ι || 185 ἀληθινοῦ Ι || 186 κριτικοῦ Ι

48. i.e. *marchese*, *marquis*, *marcher-lord*.

49. On all these see *Three Treatises*, [C] 290ff. and comm., 229-230.

50. The next section belongs to the material concerned with the expedition to Crete of 949, but was inserted at this point in the manuscript, presumably by error. See *infra*. On the titles, posts, units and other technical terms in the following sections (including discussion of numbers, thematic and unit organisation and related topics), see *infra*, with further literature and references; also *Three Treatises*, s.v., with older literature; also *ODB* s.v.

20 *nn.* each, the *komètes*, 6 *nn.* each, the soldiers, 3 *nn.* each, the captains of the *galeai*, 4 *nn.* each, the crews of the *galeai*, that is to say, the Mardaites, 3 *nn.* each.

Note that the troops from the Charpezikion *thema* were paid thus

the great *toumarchai*, the *meriarchès*, the *komès* of the tent, and the *domestikos* of the *thema*, 5 *nn.* each;⁵¹ the lesser *toumarchai*, 4 *nn.* each, the *drouggarioi*, 3 *nn.* each, the soldiers, 2 *nn.* each

Note that the Sthlabesianoi established in the Opsikion were paid thus

their three chiefs, 5 *nn.* each, and the rest, 3 *nn.* each.

Those who crossed to Crete from the *thema* of the Thrakesians⁵²

the *stratègos*, the *toumarchès* of the Theodosiaci, the *toumarchai* of the Victores, the *toumarchai* of the coast,⁵³ the *meriarchès*, the *chartoularios* of the *thema*, the *komès* of the tent, the *domestikos* of the *thema*, 64 *drouggarokomètes*, some of these *drouggarokomètes* having 2 soldiers each, some 3 soldiers each, so that the total of soldiers was 150.

From the staff of the general, the *prôtomandatôr*, the *prôtokagkellarios*, the *prôtobandophoros*, 6 *prôtodomestikoi*, 6 *prôtokentarchoi*, 100 staff foot soldiers.

From the Armenians guarding the coast: as the *stratègos* reported, he had up to 600 men equipped for the crossing to Crete; but as a result of the lack of transport vessels only 50 were permitted to cross.

From the *bandon* of the *tourma* of the Theodosiaci 1 *komès*, 4 *proagetai*,⁵⁴ the *prôtomandatôr* of the *meriarchès*, the *domestikos* of the *toumarchès*, 7 altogether.

From the *bandon* of the *meriarchès* likewise 7.

(Note) that the *drouggarios* of the fleet did not order soldiers to cross to Crete, except for officers and *proagetai*.

(Note) that, on account of his being ill, the *toumarchès* of the Vicrores was left behind by the *drouggarios* of the fleet to guard the coast of the *thema*. The said *toumarchès* also kept his *proagetai*.

51. The tactical and administrative organisation of the *themata* was by the tenth century very varied, as new military-provincial districts were established. In particular, areas newly conquered often had a radically different military administrative establishment, reflecting their traditional pre-Byzantine arrangements. The Charpezikion *thema* in Armenia provides a good example. See *infra*.

52. See below: this section is the response to the request for further details of the troops from Thrakesion who took part in the campaign.

Bonn 66

L 223r

20

21

Bonn 66

¹⁹⁰ οἱ στρατιῶται ἀνὰ : γ', οἱ ναύκληροι τῶν γαλεῶν ἀνὰ : δ', ὁ λαὸς τῶν γαλεῶν. ἡτοι οἱ Μαρδαῖται, ἀνὰ : γ'.

ίστεον, δτι οι τοῦ θέματος τοῦ Χαρπεζικού ἐρογεύθησαν οὕτως·

οι μεγάλοι τουναμάρουσι διεργάζονται στην πόλη της Αθήνας.

CHAPTER FIVE / FIGHTING FOR YOURSELF WITH THE LAW

στέον, δτι οι Σθλαβησιάνοι οι καθισθέντες είς τὸ Ὀφίκιν ἔρογεύθησαν οἵτως·

⁶⁶³ αἱ τρεῖς αὐτῶν κεφαλαὶ ἀνὰ : | ε', καὶ οἱ λοιποὶ ἀνὰ νομισμάτων γ'.

οἱ ἀπὸ τοῦ θέματος τῶν Θρακη||σίων ἐν τῇ Κρήτῃ περάσαντες,

ο στρατηγός, ὁ τουρμάρχης τῶν Θεοδοσιακῶν, οἱ τουρμάρχαι τῶν Βικτόρων, οἱ τουρμάρχαι τῆς παραλίου, ὁ μεριάρχης, ὁ χαρτουλάριος τοῦ θέματος, ὁ κόμης τῆς κόρτης, ὁ δομέστικος τοῦ θέματος, δρουγγαροκόμητες ἔδ', ἔχοντες οἱ αὐτοὶ δρουγγαροκόμητες οἱ μὲν ἀνὰ στρατιωτῶν δύο, οἱ δὲ ἀνὰ στρατιωτῶν γ', ὡς εἶναι τὸ πᾶν στρατιώτας ὅν.

από της προελεύσεως τοῦ στρατηγοῦ ὁ πρωτομανδάτωρ, ὁ πρωτοκαγκελλάριος, ὁ πρωτοθανάτοφόρος, πρωτοδομέστικοι ζ', πρωτοχένταρχοι ζ', προελευσιμάιοι πεζοί ρ'.

ἀπὸ τῶν Ἀρμενίων τῶν φυλασσόντων τὴν παραλίαν τοῦ θέματος. ὡς γὰρ ἀνήγαγεν ὁ στρατηγός, εἶχεν ἔως τῶν χ' ἐξωπλισμένους πρὸς τὸ περάσαι ἐν Κρήτῃ διὰ δὲ τὴν ὀλιγότητα τῶν καματερῶν καραβίών οὐ μηνεγωνόθροπιν περιμέμει, εἰ μη οἱ ν.

ἀπὸ τοῦ βάνδου τῆς τούρμας τῶν Θεοδοσιακῶν κόμης α', προσαγέται δ', ὁ πρωτομαρχότωρ τοῦ τομούραχον α' ὁ δουέστυχος τοῦ τομούραχον α' φίλος ζ'

ἀπὸ τοῦ βάγδου τοῦ μερύσου διαιρίως.

ὅτι στρατιώτας οὐ προσέταξεν ὁ δρουγγάριος τοῦ πλοίου περάσαι ἐν Κρήτῃ, εἰ μὴ
ἄρχοντας καὶ προαγέστας.

ὅτι ὁ τουρμάρχης τῶν Βικτόρων διὰ τὸ ἀσθενεῖν αὐτὸν κατελείφθη παρὰ τοῦ δρουγγαρίου τοῦ πλοίου εἰς φύλαξιν τῆς παραλίου τοῦ θέματος. | ἐκράτησεν δὲ ὁ αὐτὸς τουρμάρχης καὶ τοὺς προαγέτας αὐτοῦ.

γυλεων Λ || γυλεων Λ || 192 χαριτωνίων Λ || 194 νομησματιων) Ι || 196 διφίκιον Βοπη || 198 νομησματ(ων) 199 γυλατέων Βοπη || ειν L || 211 πρωτομανδάτορ Λ.

⁵³ The Ms. has *tourmarchai*, but the context demands a singular *tourmarché* in each case.

54. Literally 'guides', but their function is unclear. 'Staff officers' might equally be appropriate.

[Cap. 45]

**The expedition which took place against the island of Crete,
and the equipping of the naval and cavalry forces,
in the seventh indiction in the time of Constantine and Romanus,
purple-born and faithful emperors in Christ⁵⁵**

The imperial fleet, 150 units,⁵⁶ of which 6 *pamphylooi* and 2 more, recently-constructed.

100 *ousiaka chelandia*.⁵⁷ Of these 100 units, 7 in Dyrrachion and Dalmatia, 3 in Kalabria, and with the *ostiarios* and *nipsistiarios* Stephen on Spanish duty 3 units.

1 *pamphylos* and 24 crews to protect the God-guarded City.

Those intended to go on the campaign to Crete

7 *pamphylooi*, 33 *ousiaka chelandia*; altogether 40 *chelandia*.

20 *dromônes* with 2 crews each: 40 crews.

The Rus', 584 men, and the servants accompanying the expedition, 45 men: altogether 629 Rus'.

The Toulmatzoi, 368 men; the prisoners, 700 men.

The *stratègoi* of the naval *themata* were left to protect the City: the *stratègos* of the Aegean Sea with 6 *pamphyla chelandia* with 120 men each and 4 *ousiaka chelandia* with 108 men each; 1 unit was left also to cut the wood for the eighth indiction;

the *stratègos* of Samos with 6 *pamphyla chelandia* with 150 men each and 6 *ousiaka chelandia* with 108 men each. 3 *chelandia* and 4 *dromônes* with 220 men each were sent off with the *pròtospatharios* and *asèkrêtēs* John to Africa;

the *stratègos* of the Kibyrrhaiotai with 6 *pamphyla chelandia* with 150 men each and 6 *ousiaka chelandia* with 110 men each; 2 *pamphylooi* and 4 *ousiaka chelandia* were also left to protect the *thema*; 2 units were also left to cut the wood of the 8th indiction; 1 unit and 4 *dromônes* with 220 men each were also left on Rhodes to guard the Lord Stephen, the brother-in-law of the emperor.⁵⁸ 15 *galeai* from Attalia, of which 6 *galeai*

55. The ill-fated expedition of 949 under Constantine Goggyles. See also LIO DIAC., 6-7; ZONARAS, xvi, 22; CIDRINUS, ii, 336.

56. The term *ousia* seems to mean both crew as well as 'unit' (i.e. ship and crew). See on this and the following text *infra*.

57. i.e. *chelandia* with a single complement or crew. The question of the size of the imperial navy is taken up in *infra*, where the older literature is also listed.

58. Stephen was the second son of the emperor Romanus I. Upon Constantine's establishment of his sole

ΚΕΦ. με'.

‘Η κατὰ τῆς νήσου Κρήτης γενομένη ἐκστρατεία
καὶ ἔξοπλισις τῶν τε πλοίων καὶ καβαλλαρικῶν
ἐπὶ Κωνσταντίνου καὶ Ῥωμανοῦ
τῶν Πορφυρογεννήτων ἐν Χριστῷ πιστῶν βασιλέων εἰς ἵνδ. ζ’

Τὸ βασιλικὸν πλότιμον οὐσίαι ρν', ἐξ ὅν πάμφυλοι σ' καὶ οἱ ἀρτίως κατασκευασθέντες β'.

οὐσιακὰ χελάνδια ρ'. ἐξ αὐτῶν τῶν ρ' οὐσιῶν ἐν τε Δυρραχίῳ καὶ ἐν Δαλματίᾳ οὐσίαι ζ'. ἐν Καλαθρίᾳ οὐσίαι γ'. μετὰ τοῦ δστιαρίου Στεφάνου καὶ νιψιστιαρίου εἰς τὴν 10 Ἰσπανίαν δουλία οὐσίαι γ'.

εἰς φύλαξιν τῆς θεοφυλάκτου πόλεως πάμφυλος α' καὶ οὐσίαι κδ'.

L223v τὰ μέλλοντα || ταξειδεῦσαι ἐν Κρήτῃ

πάμφυλοι ζ', οὐσιακὰ χελάνδια λγ', ὅμοι χελάνδια μ'.

δρόμωνες κ' ἀνὰ οὐσιῶν β'. οὐσίαι μ'.

οἱ Ῥῶς ἄνδρες φπδ' καὶ παιδία τὰ ποιοῦντα ταξειδεῦσαι ἄνδρες με', ὅμοι Ῥῶς χκθ'. οἱ Τουλμάτζοι ἄνδρες τξ', οἱ αἰχμάλωτοι ἄνδρες ψ'.

ἐάθησαν εἰς φύλαξιν τῆς πόλεως οἱ στρατηγοὶ <τῶν πλοιμοθεμάτων· ὁ στρατηγὸς>

Bonn 665 τοῦ Αἰγαίου πελάγους μετὰ χελανδίων παμφύλων σ' ἀνὰ ἄνδρῶν ρχ' καὶ χελανδίων | οὐσιακῶν δ' ἀνὰ ἄνδρῶν ρη'. κατελείφθη δὲ καὶ μία οὐσία εἰς τὸ κόφαι τὴν ὁγδόης 20 ἵνδ. ξυλήν.

ὁ στρατηγὸς τῆς Σάμου μετὰ χελανδίων παμφύλων σ' ἀνὰ ἄνδρῶν ρν' καὶ χελανδίων οὐσιακῶν σ' ἀνὰ ἄνδρῶν ρη'. ἀπεστάλησαν δὲ μετὰ τοῦ πρωτισπαθαρίου Ιωάννου καὶ ἀσηκρήτης ἐν Ἀφρικῇ χελάνδια γ' καὶ δρόμωνες δ' ἀνὰ ἄνδρῶν σκ'.

ὁ στρατηγὸς τῶν Κιβυρραιωτῶν μετὰ χελανδίων παμφύλων σ' ἀνὰ ἄνδρῶν ρν' καὶ 25 χελανδίων οὐσιακῶν σ' ἀνὰ ἄνδρῶν ρι'. κατελείφθη δὲ καὶ εἰς φύλαξιν τοῦ θέματος πάμφυλοι β', οὐσιακὰ δ'. κατελείφθη δὲ καὶ εἰς τὸ κόφαι τὴν τῆς ὁγδόης ἵνδ. ξυλήν οὐσίαι β'. κατελείφθη δὲ καὶ εἰς φύλαξιν τοῦ κυροῦ Στεφάνου τοῦ γυναικαδέλφου τοῦ βασιλέως ἐν Ῥόδῳ οὐσία α' καὶ δρόμώνων δ' ἀνὰ ἄνδρῶν σκ'. γαλέαι τῆς Ἀτταλίας ιε'. ἐξ αὐτῶν

1 Κεφ με' Bonn : om. L || 3 ἔξοπλησι I || 5 ἵνδικτίνοι Bonn || 8 ρ' οὐσιῶν emendav : ρουσίων L 'Ρουσίων Bonn || 9 την iter. L || 10 εἰσπονίαν I || 16 ψ Bonn || 17 τῶν πλοιμοθεμάτων ὁ στρατηγὸς supplevi : post οἱ στρατηγοὶ verba excidisse videntur || 18 αἰγέο L || 20 ἵνδ. L : ἵνδικτίνοις Bonn || 24 κηνυρραιωτῶν L || 26 ἵνδ. L : ἵνδικτίνοις Bonn || 27 γυναικαδέλφοις L Bonn || 28 ὄνδρων L

rule in 945 Stephen was exiled to Prokonesos, then to Rhodes, and finally Mitylene. See RUNCIMAN, *Romanus Lecapenus*, 234.

were left to protect the said *thema*.⁵⁹ 2 *galeai* from Antioch.⁶⁰ These also were left to protect the said *thema*. *Galeai* from Karpathos: 1 *galea* was left to guard the island of Karpathos.

From the *thema* of Peloponnese the *toumarchès* of the coast with 4 *chelandia*.

From the Mardaites of the *themata* of the West, of Nikopolis, Peloponnese and Kephallenia, 3,000 men.

Regarding the cavalry forces

From the *thema* of Thrace the *topotérêtēs*, and officers from the 4 *tagmata*, 139 men; *scholarioi* from the 4 *tagmata*, 354. Altogether, officers and *scholarioi* from the 4 *tagmata*: 493 men.

From the *thema* of Macedonia the *topotérêtēs*, and officers from the 4 *tagmata*, 83 men; *scholarioi* from the 4 *tagmata*, 293 men. Altogether, officers and *scholarioi* from the 4 *tagmata*: 869 men.⁶¹

From the peratic *tagmata*,⁶² the *Exkoubitōr*⁶³ with his *topotérêtēs* and his whole *tagma*, officers and men, altogether 700 men. The *Hikanatos* with his *topotérêtēs* and his whole *tagma*, officers and men, altogether 456.

From the Armenians recently enlisted to be paid in the eastern *tagmata*, 1,000 men.

From the Sthlabesianoi established in the Opsikion, 220 men.

The *stratēgos* of the Thrakesians with his three *toumarchai* and other thematic officers and all his *proagetai* and his whole staff, and the soldiers, whom the *drouggarioi* and *komētes* had in their service, 150 men. A further 800 soldiers were subject to a cash demand of 4 *nn.* each, making 44 *litrai* 32 *nn.*, and from this the *thema* of Charpezikion was paid 24 *litrai* 56 *nn.*

Enquire at the beginning in more detail concerning the force from the *thema* of the Thrakesians which crossed over to the island of Crete.⁶⁴

From the Armenians of the same *thema* of the Thrakesians who guard the coast of the same *thema* of Thrakesion, 600 men. But owing to the dearth of transport vessels only 50 men were permitted to cross.

The *stratēgos* of Charpezikion with his whole *thema*, that is to say with more senior *toumarchai* and the *komēs* of the tent, the *domestikos* of the *thema*, 25 men; and lesser *toumarchai*, 47 men, and *drouggarioi* 205 men, and soldiers, 428 men. Altogether, 705 men.

59. i.e. Kibyrrhaiotai.

60. Antioch ad Cragum: see RAMSAY, *Historical Geography*, 380f.; TIB 5, 191-193; near modern Gunej Koy.

61. i.e. from the detachments of the 4 *tagmata* (Scholai, Exkoubitōr, Vigla and Hikanatoi) based in Thrace and from the 4 based in Macedonia, each group under a *topotérêtēs*, probably nominally attached to the *domestikos* of the *Scholai*, the commander-in-chief. They were independent commands detached from the main *tagmata* from which they were drawn. See in general AHRWILHER, 'Recherches', and HALDON, *Byzantine Praetorians*; KÜHN, *Byzantinische Armee*.

62. The Anatolian equivalents of the Thracian and Macedonian detachments.

63. The commanders of military units were often referred to by a nominativised unit name: *Thrakētios* for

κατελείφθη εἰς φύλαξιν τοῦ θέματος γαλέαις ς' . γαλέαι τῆς 'Αντιοχείας β' . κατελείφθησαν
30 καὶ αὐταὶ εἰς φύλαξιν τοῦ αὐτοῦ θέματος. γαλέαι τῆς Καρπάθου. κατελείφθησαν εἰς
φύλαξιν τῆς νήσου Καρπάθου γαλέα α' .

ἀπὸ τοῦ θέματος Πελοποννήσου ὁ τουρμάρχης τῆς παραλίου μετὰ χελανδίων δ' .

ἀπὸ τῶν Μαρδαῖτῶν τῶν τῆς δύσεως Θεμάτων, Νικοπόλεως, Πελοποννήσου,
Κεφαληνίας ἄνδρες γ .

Bonn 666 Διὰ τοῦ καβαλλαρικοῦ

36 'Απὸ τοῦ θέματος Θράκης ὁ τοποτηρητής, καὶ ἀπὸ τῶν δ' ταγμάτων ἄρχοντες.
ἄνδρες $\rho\theta\theta'$, σχολάριοι τῶν δ' ταγμάτων. ἄνδρες $\tau\nu\delta'$. ὅμοι $\ddot{\alpha}\rho\chi\omega\nu\tau\epsilon\varsigma$ καὶ σχολάριοι τῶν
δ' ταγμάτων, ἄνδρες $\upsilon\varphi\gamma'$.

'Απὸ τοῦ θέματος Μακεδονίας ὁ τοποτηρητής καὶ ἀπὸ τῶν δ' ταγμάτων ἄρχοντες.
40 ἄνδρες $\pi\gamma'$, σχολάριοι τῶν δ' ταγμάτων, ἄνδρες $\sigma\varphi\gamma'$, ὅμοι $\ddot{\alpha}\rho\chi\omega\nu\tau\epsilon\varsigma$ καὶ σχολάριοι τῶν
τεσσάρων ταγμάτων, ἄνδρες $\omega\xi\theta'$.

'Απὸ τῶν περατικῶν ταγμάτων ὁ ἔξκουσθίτωρ μετὰ τοῦ τοποτηρητοῦ αὐτοῦ καὶ
L224r παντὸς || τοῦ τάγματος αὐτοῦ, ἄρχόντων καὶ σχολαρίων, ὅμοι $\dot{\alpha}\nu\delta\rho\bar{w}\nu\psi'$. ὁ ἵκανατος
μετὰ τοῦ τοποτηρητοῦ αὐτοῦ καὶ παντὸς τοῦ τάγματος αὐτοῦ, ἄρχόντων καὶ σχολαρίων,
45 ὅμοι $\dot{\alpha}\nu\delta\rho\bar{w}\nu\upsilon\eta\varsigma'$.

ἀπὸ τῶν Ἀρμενίων τῶν ἀρτίως καταταγέντων ὁγεύεσθαι εἰς τὰ τῆς 'Ανατολῆς
τάγματα, ἄνδρῶν α .

ἀπὸ τῶν Σθλαβησιάνων τῶν καθημένων εἰς τὸ 'Οφίκιν ἄνδρῶν $\sigma\kappa'$.

ὅ στρατηγὸς τῶν Θρακησίων μετὰ τῶν τριῶν αὐτοῦ τουρμαρχῶν καὶ τῶν λοιπῶν
50 θεματικῶν ἄρχόντων αὐτοῦ καὶ πάντων τῶν προαγετῶν καὶ πάσης αὐτοῦ τῆς
προελέυσεως καὶ στρατιωτῶν, ὃν εἶχον οἱ δρουγγάριοι καὶ κόμητες εἰς δουλείαν αὐτῶν.
ἀνδρῶν $\rho\eta'$. ὡς ἑτέρων ω' στρατιωτῶν ἀπαιτηθέντων λογάριν ἀνὰ : δ' . λίτραι μδ' : $\lambda\beta'$.
Bonn 667 καὶ ἐξ αὐτῶν ἐφογεύθη τὸ θέμα τοῦ Χαρπεζικίου | λίτρας $\kappa\delta'$: $\nu\varsigma'$.

ζήτει εἰς τὴν ἀρχὴν λεπτομερέστερον τοῦ περάσαντος λαοῦ ἐν τῇ νήσῳ Κρήτῃ ἀπὸ
55 τοῦ θέματος τῶν Θρακησίων.

ἀπὸ τῶν Ἀρμενίων τοῦ αὐτοῦ θέματος τῶν Θρακησίων τῶν φυλασσόντων τὴν
παραλίαν τοῦ Θρακηση ἄνδρες χ' . διὰ δὲ τὴν διλιγότητα τῶν καματερῶν καραβίων οὐ
συνεχωρήθησαν περάσαι εἰ μὴ ἄνδρες ν' .

ὅ στρατηγὸς τοῦ Χαρπεζικίου μετὰ παντὸς τοῦ θέματος αὐτοῦ, ἥγουν μετὰ
60 τουρμαρχῶν προκριτωτέρων καὶ τοῦ κόμητος τῆς κόρτης, τοῦ δομεστίκου τοῦ θέματος.
ἀνδρῶν $\kappa\epsilon'$, καὶ μικρῶν τουρμαρχῶν, ἄνδρῶν $\mu\zeta'$, καὶ δρουγγαρίων, ἄνδρῶν $\sigma\epsilon'$, καὶ
στρατιωτῶν, ἄνδρῶν $\upsilon\kappa\eta'$. ὅμοι $\dot{\alpha}\nu\delta\rho\bar{w}\nu\psi'$.

29 γαλαῖαι L Bonn || 30 αὖται I. αὗται Bonn || 33 μαρδαῖτων I. || 42 ἔξκουσθίτωρ Bonn || 48 ὁφίκαιον Bonn ||
52 λογάριον Bonn || μδ' emendavī : μα' L Bonn || 54 τὴν ἀρχὴν L : τοιι, ὄρχονται, Bonn || 57 θρακηση I
Θρακηση Bonn : an scribendum Θρακησι<ων>? || καματερῶν Bonn || 58 εἰμ I. || 60 προκριτοτέρων L

the *stratēgos* of the Thrakesion *thema*, for example. So here, the *Exkoubitos* and the *Hikanatos* are the
commanders of the *tagmata* of the *exkoubitoi* and *hikanatoi* respectively. See *Three Treatises*, [C] 87; 648.

64. See above: this is the query to which the earlier text provides the answer.

With regard to the pay of all the aforementioned fleets, infantry and cavalry forces

For the four *themata* of the imperial fleet, for officers and soldiers, with imperial *mandatores* and doctors and prisoners, officers and soldiers, Toulmarzoi and Rus' and the Churches and the engineers, pay in coin of 1,691 *litrai* 53 *nn.*; and in *miliarēsia*, 73 *litrai*, 62 *nn.* and 4 *mil.*, which in gold *litrai* and *miliarēsia* makes 17 *kentēnaria*, 65 *litrai*, 42 *nn.*, and 4 *mil.*⁶⁵

The pay sent off to Dyrrachion on account of the 7 *chelandia* which are there and the prisoner Toulmatzoi for 793 men, *miliarēsia* equivalent in gold 116: 17 *nn.*

Bonn 668

70

For the *thema* of the Aegean Sea, for the thematic officers and the army, pay in gold *litrai* 69: 24.

Enquire at the beginning of the account-book in greater detail about the pay for the three naval *themata*.

For the *thema* of Samos, for the thematic officers and army pay in gold of 134: 20.

75

For the *thema* of Kibyrrhaiotai, for the thematic officers and the army with the Mardaires of the said *thema*, pay in gold of 177: 4.

For the mobilisation pay of the Mardaites of the *themata* of the West for 3,000 men at 4 *nn.* each, gold 166: 48. Of this, 36 *litrai* were given to the *patrikios* Krinites by the *patrikios* Michael Ouranos.

L 224v

80

And the amount given by the *koitōn* to make up the sum of 166: 48⁶⁶ was 130: 48, and altogether the total was 166: 48. The said 3,000 Mardaites should take each month 1 *nomisma* each, which makes over 4 months another 166: 48.

For the 4 *tagmata* of Thrace for expeditionary largesse instead of garments 171: 29 in gold coin, and 9 *skaramaggia*.

85

For the 4 *tagmata* of Macedonia, for expeditionary largesse instead of garments 130: 62 in gold coin, and 20 *skaramaggia*.

For the 2 peratic *tagmata*, of the Exkoubiron and the Hikanatoi, for expeditionary largesse instead of garments, 4 *kentēnaria*, 80 *litrai* in gold, 112 *skaramaggia*.

Bonn 669

90

For the *thema* of Charpezikion,

22 more senior *toumarchai*, the *merarchēs* of the *thema*, the *komēs* of the tent, the *domestikos* of the *thema*, 5 *nn.* each; 47 lesser *toumarchai* at 4 *nn.* each, 205 *drouggarioi* at 3 *nn.* each, 428 soldiers at 2 *nn.* each. Pay in gold of 24: 56.

For the Sthlabesianoi established in the Opsikion, 127 men, 3 chiefs at 5 *nn.* each, the remaining 124 at 3 *nn.* each. Pay in gold of 5: 27.

95

65. In fact, the sums = 17: 65: 43. 4

66. The Ms. has 166: 46, clearly a copyist's error.

Διὰ τῆς ῥόγας τῶν προειρημένων πάντων πλοίων, πεζῶν καὶ καβαλλαρίων

Διὰ τῶν τεσσάρων θεμάτων τοῦ βασιλικοῦ πλοίου, διὰ τῶν ἀρχόντων καὶ
65 στρατιωτῶν σὺν βασιλικῶν μανδατόρων καὶ ἵατρον καὶ τῶν αἰχμαλώτων, ἀρχόντων καὶ
στρατιωτῶν. Τουλματζίων καὶ τῶν Ὅρων καὶ τῶν ἐκκλησιῶν καὶ τῶν μαγγαναρίων, ῥόγα
χάραγμα λίτραι ἀχραῖ : νγ̄. καὶ διὰ μιλιαρησίων λίτραι ογ̄ : ξβ̄ ∠ δ̄, γινόμενα χρυσοῦ
λίτραι, μιλιαρήσια, κεντηνάρια μζ̄, λίτραι ξε̄ : μβ̄ ∠ δ̄.

Bonn 668 ἡ ἀποσταλεῖσα ῥό | γα εἰς τὸ Δυνράχιον λόγω τῶν ζ̄ χελανδίων τῶν ὅντων ἐκεῖσε καὶ
70 αἰχμαλώτων Τουλματζίων ὑπὲρ ἀνδρῶν φφγ̄ χρυσοῦ λίτραι ∠ λίτραι ρις̄ : ιζ̄.

διὰ τοῦ θέματος τοῦ Αἴγαιον πελάγους, διά τε τῶν θεματικῶν ἀρχόντων καὶ τοῦ
στρατοῦ ῥόγα χρυσοῦ λίτραι ξθ̄,, κδ̄.

ζήτει εἰς τὴν ἀρχὴν τοῦ τετραδίου λεπτομερέστερον τὴν ῥόγαν τῶν γ̄
πλοϊκοθεμάτων.

75 διὰ τοῦ θέματος τῆς Σάμου, διά τε τῶν θεματικῶν ἀρχόντων <καὶ> τοῦ στρατοῦ
ῥόγα χρυσοῦ λίτραι ρλδ̄,, κ̄.

διὰ τοῦ θέματος τῶν Κιθυρραιωτῶν, διὰ τῶν θεματικῶν ἀρχόντων καὶ τοῦ στρατοῦ
σὺν Μαρδαῖτῶν τοῦ αὐτοῦ θέματος, ῥόγα χρυσοῦ λίτραι ροζ̄,, δ̄.

L224 διὰ τοῦ προχρέου τῶν || Μαρδαῖτῶν τῶν τῆς δύσεως θεμάτων ὑπὲρ ἀνδρῶν ,γ̄ ἀνὰ ,,
80 δ̄ χρυσοῦ λίτραι ρξς̄,, μη̄. ἐξ αὐτῶν ἐδόθη τῷ πατρικῷ Κρινίτῳ παρὰ τοῦ πατρικίου
Μιχαὴλ τοῦ Οὐρανοῦ λίτραι λξ̄.

καὶ τὰ δοθέντα ἀπὸ τοῦ κοιτῶνος εἰς ἀναπλήρωσιν τοῦ ποσοῦ τῶν ρξς̄ λιτρῶν καὶ ,,
μς̄ λίτραι ρλ̄,, μη̄, καὶ ὅμοι τὸ πᾶν λίτραι ρξς̄,, μη̄. καὶ ὀφείλουσιν λαμβάνειν οἱ αὐτοὶ
Μαρδαῖται καθ̄ ἔκαστον μῆνα αἱ τρεῖς χιλιάδες ἀνὰ νομίσματος ᾱ. γινόμενα διὰ τῶν δ̄
85 μηνῶν ἔτεραι λίτραι ρξς̄,, μη̄.

διὰ τῶν δ̄ ταγμάτων Θράκης διά τε ῥόγας φιλοτιμίας τοῦ φοσσάτου ἀντὶ τῶν
ίματίων χρυσοῦ λίτραι ροᾱ,, κθ̄. σκαραφαμάγγια θ̄.

Bonn 669 διὰ | τῶν δ̄ ταγμάτων Μακεδονίας διά τε ῥόγας φιλοτιμίας τοῦ φοσσάτου ἀντὶ τῶν
ίματίων χρυσοῦ λίτραι ρλ̄,, ξβ̄. σκαραφαμάγγια κ̄.

90 διὰ τῶν περατικῶν δύο ταγμάτων τοῦ τε ἐξουσίτον καὶ τῶν ἴκανάτων, διά τε ῥόγας
φιλοτιμίας τοῦ φοσσάτου ἀντὶ ίματίων χρυσοῦ ρρ δ̄, λίτραι π̄, σκαραφαμάγγια ριβ̄.

διὰ τοῦ θέματος τοῦ Χαρπεζιάου

τουρμάρχαι προκριτώτεροι κβ̄, δ̄ μεράρχης τοῦ θέματος. δ̄ κόμης τῆς κόρτης. δ̄
δομέστικος τοῦ θέματος ἀνὰ ,, ε̄, τουρμάρχαι ἐλαττότεροι μζ̄ ἀνὰ ,, δ̄. δρουγγάριοι σε̄
95 ἀνὰ ,, γ̄. στρατιῶται υχή ἀνὰ ,, β̄. ῥόγα χρυσοῦ λίτραι κδ̄,, νς̄.

διὰ τῶν ΣΩλαβησιάνων τῶν καθημένων εἰς τὸ Ὀφίκιν, ἄνδρες ρκζ̄. κεφαλαὶ τρεῖς
ἀνὰ ,, ε̄, καὶ οἱ λοιποὶ ρκδ̄ ἀνὰ ,, γ̄, ῥόγα λίτραι ε̄,, κζ̄.

68 ξβ̄ L : κβ̄ Bonn || 71 αγ̄ιον I || 72 στρατοῦ emendavι : στρατηγοῦ L Bonn || ,, κδ̄ : : κδ̄ Bonn || 73 τ(ην)
ἀρχ(ην) L : τοὺς ἀρχόντας Bonn || 75 καὶ supplevi || 76 ,, κ̄ : : κ̄ Bonn || 84 νομησματος L || 86 φοσσάτου ut
semp̄ L || 89 ξβ̄ L : η̄ Bonn || 93 προκριτότεροι L || 96 ὀφίκιον Bonn

Note that, since the *thema* of the Thrakesians was not paid, but went across unpaid to Crete, for this reason it is not entered here.

The fitting out of 1 *dromôn* is

70 lamellar corselers, 12 light mail shirts for the steersmen and siphon-operators and leading oarsmen, 10 other standard mail shirts, 80 helmets, 10 helmets with face-guards, 8 pairs of arm-guards, 100 swords, 70 stitched shields, 30 Lydian shields, 80 trident-spears, 20 sickle-bladed lances, 100 heavy spears, 100 javelins, 50 Roman bows with double strings, 20 platforms with hand-spanned bow-ballistae with silken strings, 10,000 arrows, 200 'flies' (bolts), 10,000 caltrops, 4 grapnels with chains, 50 surcoats, 50 (felt) caps.⁶⁷

The *dromôn* ought to have 300 men: 230 sailors being oarsmen and also soldiers, the remaining 70 men being soldiers from the cavalry *themata* and from the barbarians.⁶⁸

For the 6 *pamphyloï*

As many hide shields as God shall show the holy emperor (are necessary), 60 lamellar corselets each, 60 helmers each, 10 mail shirts each.

For the *ousiaka chelandia*

10 lamellar corselers each, 10 helmers each, 2 light mail shirts, 8 standard mail shirts.

For equipment for siege warfare⁶⁹

a wooden tower, tortoises, large bow-ballistae with pulleys and silken strings, traction-powered stone-throwers, lambda-framed stone-throwers, artillery pieces⁷⁰ and their fittings:⁷¹ rams for the tortoises, and for the various items of artillery ring-clamps, shackles and bolts, leather-covered iron slings, plates for covering the sheaves of the various pulleys, crowbars, mallets,⁷² pick-axes,⁷³ weights, hides, felts, spades,⁷⁴ cauldrons, levers/shafts, shovels, various ropes, nails, tunics (aprons?).

67. For the various items of armour and weaponry, see J.F. HALDON, 'Some aspects of Byzantine military technology from the sixth to the tenth centuries', *BMGS* 1, 11-47, 1975. In particular, KOIAS, *Byzantinische Waffen*, presents a detailed analysis of the written sources and in particular the technical terminology employed: 37-64 (on body-armour, esp. the terms *lōrikion*, *klibanion* etc.); 65-74 (arm- and leg-guards); 75-87 (helmets); 88-131 (shields). For weapons: 133-161 (swords); 162-172 (axes); 173-184 (maces); 185-213 (lance and spear). On body-armour, see T. DAWSON, 'Kremasmata, kabadion, klibanion: some aspects of middle Byzantine military equipment reconsidered', *BMGS* 22, 38-50, 1998. For discussion of manuscript illustrations of Byzantine military equipment: A. HOFMEYER, 'Military equipment in the Byzantine manuscript of Scylitzes in the Biblioteca Nacional in Madrid', *Gladius* 5, 1966, for a discussion of the eleventh-century material and the manuscript illustrations. On the *menaulation*, or heavy infantry spear/pike, see M.P. ANASTASIADIS, 'On handling the menaulation', *BMGS* 18, 1-10, 1994; and E. MC GEE, 'Infantry versus cavalry: the Byzantine response'. *REB* 46, 135-145, 1988 and esp. 'Menaulation - menaulatori', *Dipytcha* 4, 53-57, 1986-1987.

ἰστέον, ὅτι διὰ τὸ μὴ ὁργευθῆναι τὸ θέμα τῶν Θρακησίων, ἀλλὰ ἀρόγευτον περάσαι εν Κρήτῃ, διὰ τοῦτο οὐδὲ ἐνταῦθα ἔτεθη.

100 **Ἐστιν ἡ ἔξοπλισις δρόμωνος α'**

Κλιθάνια οἱ λωρίκια φιλὰ λόγῳ τῶν πρωτοχαράκων καὶ σιφωναρίων καὶ πρωρέων β'. ἔτερα λωρίκια κοινὰ ι', κασίδια π', αὐτοπρόσωπα ι'. χειρόφελλα ζυγαὶ η', σπαθία ρ'. σκουτάρια ῥαπτὰ ο', σκουτάρια Λυδιάτικα λ', κοντάρια μετὰ τριβελλίων π'.

104 λογχοδρέπανα κ', μενούλια ρ', ρίκταρια ρ', τοξαρέας Ῥωμαίας σὺν κόρδων διπλῶν ν'.
Bonn 670 ναύκλας μετὰ χειροτοξοβολίστρων καὶ κόρδων μεταξοτῶν κ', σαγίτας χιλιάδας ι', μῆνας σ', τριβόλια χιλιάδας ι', ἀγρίφους μετὰ ἀλυσιδίων δ', ἐπιλώρια ν', καμελαύκια ν'.

οἱ δρόμων ὄφείλει ἔχειν ἄνδρας τ', οἱ μὲν σλ' πλόιμοι κωπηλάται ἦτοι καὶ πολεμισταί,
L225r καὶ οἱ ἔτεροι οἱ ἄνδρες πολεμίμισται ἀπὸ τῶν καβαλλαρικῶν θεμάτων καὶ ἀπὸ τῶν ἐθνικῶν.

110 **διὰ τῶν ἔξ παμφύλων,**

δόρκας ὅσας ὀδηγήσει ὁ Θεὸς τὸν βασιλέα τὸν ἄγιον· κλιθάνια ἀνὰ ξ', κασίδια ἀνὰ ξ'. λωρίκια ἀνὰ ι'.

διὰ τῶν οὐσιακῶν χελανδίων

κλιθάνια ἀνὰ ι', κασίδια ἀνὰ ι', λωρίκια φιλὰ β', καὶ κοινὰ η'.

115 **διὰ τῆς ἔξοπλίσεως καστρομαχίας**

εὐλόπυργος, χελῶναι, τοξοβολίστραι μεγάλαι μετὰ τροχιλίων καὶ κόρδων μεταξοτῶν, τετραρέαι, λαζδαρέαι, μαγγανικά, καὶ ἡ τούτων ἔξόπλισις.

εἰς μὲν τὰς χελώνας κριοί, εἰς δὲ τὰ διάφορα μαγγανικά κρικελοπάγουροι, φελλία καὶ δάκτυλοι, σφενδόναι σιδηραὶ πετζέῖναι, πέταλα πορτῶν λόγῳ ἐνδύσεως τῶν
120 διαφόρων τροχιλίων, σείστας, τζόκους, ἀξινορύγια, βαρέας, βυρσάρια, κέντουκλα, σκαφίδια, καλδάρια, καπούλια, πτυάρια, σχοινία διάφορα, καρφία, ἀρμελαύσια.

100 ἔξόπλησις L || δροιμων) in margine L || 107 δρόμων L || πλοημοι I || 111 ὀδιγήσει L || 115 ἔξοπλήσεις L || 116 χιλῶναι L || 117 ἔξωπλησις L

68. This is important: the soldiers on the warships were not a special brigade of marines, as is frequently and incorrectly assumed, but on the contrary made up from the regular cavalry units of the *tagmata* and *themata*. See also *infra*.

69. The more obscure terms in the following lists are dealt with *infra*.

70. On artillery and the technical terms which appear in these lists, see *infra*. The term *magganika* referred both to artillery/machinery, and could also be synonymous with *bowl-hallistae*, which appears to be the meaning intended/assumed here.

71. It is clear from the lists which follow, that the various items of siege artillery were disassembled and stored, to be re-assembled at the site of the action.

72. Cf. *infra* and NICEPH., *Tact.*, ed. FOUGA II, § 65.17 (walls are to be undermined with *tzokoi* and *seistai*).

73. See *Three Treatises*, [C] 130, with commentary, p. 199.

74. See Suda, iv, 373: *skapheidion = hisgariou*. Or tubs: cf. *De adm. imp.* § 9. 17.

For the fitting out of the artillery

equipment for 4 traction-powered stone-throwers, 4 lambda-framed stone-throwers, 4 swivel ballisrae,⁷⁵ that is: 2 rings each, 1 clamp, 12 iron slings, 200 hinged plates for the pulleys, 100 crow-bars, 200 pick-axes, 100 double-bladed axes, 300 (single-bladed) battle-axes, 10 rams for the torroises, 20 large weights, 30 small weights.

With regard to what ought to have been provided for the fitting out of 20 dromônes from the department of the *Eidikon*⁷⁶

5 sheets each of lead for the bilges,⁷⁷ altogether 100 sheets, which is by weight 3,000 *litrai*, 20 hides for the same bilges, 20 large hinged plates, 500,000 caltrops, 200 double-headed axes, 500 single-bladed axes,⁷⁸ 200 extra felts, 100 extra small sails, 200 *litrai* of unworked copper, 200 *litrai* of tin, 200 *litrai* of unworked lead, 100 *litrai* of wax, 200 spades, 200 tubs, 2,000 levers/shafts, 1,000 shovels, 5 thick silken spartum (bow) strings, and for the small bow-ballistae 5 spartum strings, 100 hides for the *chelandia*, 100 pitchers, 10 goats-hide coverings⁷⁹ for each *dromônion*, in total 200, 24 leatheren slings.

Note that the expense of the sails and the screens⁸⁰ should come from the *eidikon*.

With regard to what ought to have been provided for the fitting out of 20 dromônes from the department of the imperial *Vestiarion*

3 siphons each, altogether 60 and 40 extra angled brackets with side-plates, 20 sails, 60 screens, 20 anti-axe screens,⁸¹ breastworks/pavisades according to prescription,⁸² 50 oar-sleeves each, altogether 1,000, with their brackets, 120 oars each, altogether 2,400, 20 mast-head blocks with the rest of the pulleys, 20 shackles, 40 fenders/bolsters, 20 bolts/lynch-pins, facings with their stem-post fittings,⁸³ 120 anchors, 120 anchor cables, 20 winches with their halyards, 24 grapnel cables each, altogether 480, 12 linden cables each, altogether 240, 200 crow-bars, 400 mallets, 400 pick-axes, 200 extra pins, 3,000 claw-nails, 3,000 round/flat-headed nails,⁸⁴ 6,000 4-finger (7.8cm) nails, and for the fastening 12,000, 3,000 *litrai* of unworked iron, 80 braziers.

75. The identification is not certain: see discussion *infra*.

76. For these fiscal departments see *Three Treatises*, and *OIKONOMIDES, Listes*.

77. Reading *kolyrbomata* rather than *kaly(m)bomata*. See *infra*.

78. *Tzirkourion* < Lat. *securis*. See KOLIAS, *Byzantinische Waffen*, 167-169.

79. Cf. D. CANGE, 149; REISKE, *De cer.*, II, 794: Lat *attegia*, hut. See LIO, *Tact.*, v. 9; MAURICE, *Strat.*, xii B 21 (goats' hides used to protect the *ballistae*).

80. Cf. aG *diphthera* (1) hide (2) anything made of leather; is this a reference to the goats' hide covers listed above?

81. The word is ambiguous: either small axes or hatchets, as proposed by REISKE, *De cer.*, II, 795; or something intended to ward off axes, as proposed by KOLIAS, *Byzantinische Waffen*, 168 n. 47. In the context, this is perhaps preferable.

82. Cf. *Strat.*, xii B 21.16; *Natonomachika* 5, 2.13; REISKE, *De cer.*, II, 795. A defensive arrangement consisting either of overlapping shields, or reinforced canvas screens, to protect the crew from enemy missiles.

Bonn 6⁷¹ διὰ τῆς | ἐξοπλίσεως τῶν μαγγανικῶν

ἐξόπλισις τετραφέων δ', λαβδαρέων δ', εἰλακτιῶν δ'. ἥγουν κρικέλλους ἀνὰ δύο,
παγούρους α', σφενδόνας σιδηρᾶς ιβ', πέταλα πορτῶν εἰς τὰ τροχίλια σ'. σείστας ρ',
125 ἀξινορύγια σ'. πελέκια ρ', τζικούρια τ', κριοὺς εἰς τὰς χελώνας ι'. βαρέας μεγάλας κ'.
βαρέας μικράς λ'.

Διὰ τῶν ὄφειλόντων φροντισθῆναι ἀπὸ τοῦ σεκρέτου τοῦ εἰδικοῦ εἰς
ἐξόπλισιν τῶν κ' δρομωνίων

μολίνιν λόγῳ τῶν κολυμβωμάτων ἀνὰ χαρτῶν ε'. ὅμοῦ χάρται ρ', σταθμίον λίτραι γ.
130 βυρσάρια λόγῳ τῶν αὐτῶν κολυμβωμάτων κ', πέταλα μεγάλα πορτῶν τ'. τριβόλια
χιλιάδες φ', πελέκια σ'. τζικούρια φ', κέντουχλα κατὰ περίσσειαν σ', ἀρμενόπουλα κατὰ
περίσσειαν ρ', χάλκωμα ἀργὸν λίτραι σ', κασσίτερον λίτραι σ', μολίθιν ἀργὸν λίτραι σ',
κηρίν λίτραι ρ', σκαφίδια σ', καλδάρια σ', καπούλια χιλιάδας β', πτυάρια χιλιάδα α',
κόρδας μεταξωτὰς παχέας σπαρτίνας ε', καὶ εἰς τὰς μικρὰς τοξοβολίστρας σπαρτίνας ε',
135 βυρσάρια λόγῳ τῶν χελανδίων ρ', κάδους ρ', ἀτέγια κιλικεῖνα κατὰ δρομώνιν ι', ὅμοῦ σ',
σφενδόναι πετζέΐναι κδ'.

ἴστεον. ὅτι ἡ ἔξοδος τῶν ἀρμένων καὶ τῶν διφθερίων ὄφείλει ἐξέρχεσθαι ἀπὸ τὸ
125 εἶδικόν. ||

Bonn 6⁷²

Διὰ τῶν ὄφειλόντων φροντισθῆναι ἀπὸ τοῦ σεκρέτου τοῦ βασιλικοῦ
βεστιαρίου εἰς ἐξόπλισιν τῶν κ' δρομωνίων

σιφώνια ἀνὰ γ', ὅμοῦ ξ', καὶ κατὰ περίσσειαν γονάτια ἀκόντια μετὰ βουκολίων μ',
ἄρμενα κ', διφθέρια ξ', παραπλέκια κ', καστελώματα κατὰ τύπον, μανικέλια ἀνὰ ν',
ὅμοῦ ,α σὺν τῶν γονατίων αὐτῶν, κωπία ἀνὰ ρχ', ὅμοῦ βν', χαλκίσια κ' μετὰ καὶ τὰ
λοιπὰ μάγγανα. φελλία κ', μαξιλάρια μ', περόνια κ', καταπρόσωπα σὺν τῶν
145 κατακοράκων αὐτῶν, σίδηρα βολιστικὰ ρχ', σιδηροβόλια ρχ'. ἀναγοκατάγοντα σὺν τῶν
ἴμανταριών αὐτῶν κ', περιπετόμενα ἀνὰ κδ'. ὅμοῦ υ', φιλουρέαι ἀνὰ ιβ', ὅμοῦ σμ',
σείστας σ', τζόκους υ', ἀξινορύγια υ', περόνιας κατὰ περίσσειαν σ', καρφὶν ἀρπάγιν
χιλιάδες γ', γυλαρικὸν καρφὶν ,γ. τετραδακτυλαίον καρφὶν ,ς, καὶ τῆς παρηλώσεως
χιλιάδες ιβ', σιδηρον ἀργὸν λίτραι ,γ. κατζία π'.

122 ἐξοπλήσεως L || 123 τετραφ(υί)ων ut vid. L || λαβδαρίσ(εί)ων L || 127 φροντισθειν L || 128 ἐξόπλησιν L || δρομονιών L Bonn || 129 μολίθιον Bonn || καλυμβωμάτων L Bonn || στι L Bonn || 130 κολυμβώματων L Bonn || 131 καταπερίσια L || 132 καταπερίσια L || καστίτερον L || 133 μολίθιον ... κηρίον Bonn || χισδις L || 135 δρομονιών L δρομονιών Bonn || 137 διφθερίων L || 140 ἐξόπλησιν L || δρομονιών L Bonn || 141 καταπερίστειο L || 144 φελλία L || 147 καταπερίσσεια L || καρφίον ἀρπάγιον Bonn || 148 καρφίον Bonn || 148 καρφίον Bonn

83. On these technical terms, see *infra*. The *peronīa*, *kataprosōpa* and *katakorakes* remain problematic. An alternative translation, emending the punctuation of the manuscript to delete the stop between *peronīa* and *kataprosōpa*, would read: 20 bow (or beak-head) spurs and their stem-post fittings. See *infra, loc. cit.*

84. Ambiguous: see REISKE, *De cer.*, II, 795, and I, 677.4 - γυραρικὸν and cf. aG γυράλεος, i.e. rounded; cf. also Suda I, 545; DU CANCI, 268: γυλαριον = κεστρένε/κεστρα, hammer/flatfish.

For fitting out 4 traction-powered stone-throwers, 4 lambda-framed stone-throwers, 4 pieces of artillery⁸⁵

30 rings, 15 clamps, 30 shackles, also for the large bow-ballistae, rams for the tortoises, 15 bolts, 20 large weights, and 30 smaller weights, and for the large bow-ballistae the prescribed amount of iron, 10,000 *litrai* of pitch, 300 round pitchers of liquid tar, 50 pitchers of cedar resin, 8,000 *litrai* of linen, 2,000 *litrai* of hemp, 20 skiffs, 12 iron slings, 50 extra anchor cables, 50 anchors, 100 linden cables, 100 grapnel cables, 100 spartum cables, 200 lightweight cables, 100 four-legged grates, 50 (*litrai* of) linen for the sponges, 400 mooring cables, 24 siphons for the 8 *pamphylooi*, 80 siphons for the 40 *ousiaka chelandia*, 6,000 decking nails.

What was disbursed from the department of the *Eidikon* for the Cretan campaign

24 *litrai* in gold was taken from the mint⁸⁶ for the purchase of various items for the expedition to Crete, together with the fitting out of the 9 Rus' vessels and the 2 single-deckers⁸⁷ of the prisoners, together with the various extra supplies and remaining items ordered by (imperial) command to be given to the God-preserved armament of the imperial fleet, and which was disbursed as follows:

To Joachim, imperial *spatharios* and *archôn* of the armoury,⁸⁸ was given 266 *nn.* 0⁸⁹ *mil.* for 500,000 caltrops. The same Joachim was given 50 *nn.* for 500 axes. The same Joachim was given 20 *nn.* for 200 double-bladed axes. The same Joachim was given 10,000 *litrai* of iron from the armoury and 30 *nn.* for buying charcoal, for 4,000 blades for the barbed *chevaux de frise*.⁹⁰ The same Joachim was also given 100 *nn.* for 200 pairs of arm-guards. Altogether the sum given to Joachim, *archôn* of the armoury, amounted to 466 *nn.* 0 *mil.* in gold, which makes 6 *litrai* 34 *nn.* 0 *mil.*

There was given for the purchase of bolts of canvas⁹¹ for making nine sails of 30 cubits each for the nine Rus' vessels, and a further 2 sails of 28 cubits for the 2 single-deckers of the prisoners, along with the extra bolts of canvas which were given to the same Rus'; for all these bolts, [1],154 *nn.*,⁹² which were bought both from the monks drawn on the rents⁹³ of the monastery of Lord Romanus and from the drapers⁹⁴ on the

85. The term *magganika* in these lists appears to be equivalent to *alakattia/eilaktia*, which appears in the same place after the two types of stone-thrower.

86. *Zygos*: an alternative term for the mint where gold was weighed out before and after minting. The official responsible was the *zygostatès*. See OIKONOMIDES, *Listes*, 315; more especially, HANAY, *Studies*, 427 with refs.

87. i.e. in contrast to the imperial warships with their two banks of oarsmen.

88. On imperial armouries, see the discussion and further literature in HALDON, *infra*.

89. Bonn's text and translation have 3 *mil.* bere; the confusion arises from the Ms., where the symbol for 0 (Y) can be misread as a large cursive gamma. But the figures are otherwise consistent with this sum including no *miluressia*. The inclusion of 0 *mil.* suggests the originally columnar format of the material from which this information was taken.

90. For a wooden Roman example, see M.C. BISHOP & J.C.N. COUSIN, *Roman military equipment, from the Punic wars to the fall of Rome*, London, 1993, p. 104 and fig. 63.1. Tripods made from spears, with blades called *tziptata*, are described in other tenth-century treatises. See *infra*.

150 Ὅπερ ἔξοπλίσεως τετραρέων δ', λαθδαρέων δ', μαγγανικῶν δ'

Bonn 673 κρικέλλια λ', πάγουροι ιε', φελλία λ', καὶ λόγῳ τῶν | μεγάλων τοξοβολίστρων. κριοὶ εἰς τὰς χελώνας ιε', δακτύλιοι ιε', βαρέας μεγάλυς κ', καὶ μικροτέρας λ'. καὶ λόγῳ τῶν μεγάλων τοξοβολίστρων σίδηρα κατὰ τύπον, πίσσα λίτραι χιλιάδες ι'. ὑγροπίσσιν μαγαρικὰ στρογγύλα τ', κεδρέα μαγαρικά ν'. λινάριν λίτραι χιλιάδες η'. κανάνιν χιλιάδες 155 β', σανδάλους κ', σφενδόναι σιδηραῖ ιβ', σιδηροβολιστικὰ κατὰ περίσσειαν ν'. σιδηρόβολιν ν', φιλουρέαι ρ'. περιπετόμενα ρ', σπαρτίναις ρ'. λεπτάρια σ', τετράκουλα εἰς τὰ σιφώνια ρ', λινάριον εἰς τοὺς σφόγγους ν', σκαλοδέματα υ'. οἱ <όκτω> πάμφυλοι σιφώνια κδ' τὰ μ' οὐσιακὰ σιφώνια π'. καρφίν στεγαδερὸν χιλιάδες σ'.

Tὰ ἀπὸ τοῦ σεκρέτου τοῦ εἰδικοῦ ἔξοδιασθέντα ὑπὲρ τοῦ ταξειδίου τῆς
160 Κρήτης

ἐπήρθη ἀπὸ τὸν ζυγὸν λόγῳ ἀγορᾶς διαφόρων εἰδῶν τοῦ ταξειδίου τῆς Κρήτης σὺν ἔξοπλίσει τῶν θ' Ῥουσικῶν καραβίων καὶ τῶν β' μονερίων τῶν αἰχμαλώτων σὺν τῶν ὄρισθέντων ἀπὸ κελεύσεως δοθῆναι τὰ κατὰ περίσσειαν διαφόρων εἰδῶν εἰς τὸν 165 θεόσωστον βασιλικὸν στόλον τοῦ βασιλικοῦ πλοϊόυς καὶ λοιπῶν χρυσοῦ λίτραι κδ', τὰ καὶ ἔξοδιασθέντα οὔτως.

L 226r ἐδόθη Ἰωακεὶμ πρωτοσπαθαρίῳ καὶ ἄρχοντι τοῦ || ἀρμαμέντου ὑπὲρ τριθολίων

Bonn 674 χιλιάδων φ'. ,, σξς' ν. ἐδόθη τὸν | αὐτὸν Ἰωακεὶμ ὑπὲρ τζικουρίων φ'. ,, ν'. ἐδόθη τὸν αὐτὸν Ἰωακεὶμ ὑπὲρ πελεκίων σ' ,, κ'. ἐδόθη τὸν αὐτὸν Ἰωακεὶμ ὑπὲρ ξιφαρίων χιλιάδων δ' λόγῳ τῶν τζιπάτων ἀπὸ τὸ ἀρμαμέντον σίδηρον χιλιάδες ι' καὶ ὑπὲρ ἀγορᾶς καρθονίου 170 ,,, λ'. ἐδόθη τῷ αὐτῷ Ἰωακεὶμ ὑπὲρ χειρόφελλον ζυγῶν σ' ,, ρ'. ὅμοι τὰ δοθέντα Ἰωακεὶμ ἄρχοντι τοῦ ἀρμαμέντου χρυσοῦ ,, υξς' ν. γινόμενα λίτραι σ' ,, λδ' ν.

ἐδόθη ὑπὲρ ἀγορᾶς τῶν πανίων τῶν ῥασιακῶν λόγῳ ποιήσεως ἀρμένων ἐννέα ἀνὰ πηχῶν λ' τῶν θ' καραβίων τῶν Ῥῶς, καὶ ἑτέρων ἀρμένων β' ἀνὰ πηχῶν κη' τῶν β' μονερίων τῶν αἰχμαλώτων σὺν τῶν δοθέντων πανίων ῥασικῶν κατὰ περίσσειαν τοὺς 175 αὐτοὺς Ῥῶς. ὑπὲρ πανίων διὰ τῶν ἀμφοτέρων <νομίσματα>, αρνδ', τὰ καὶ ἀγορασθέντα ἀπὸ τοὺς ὀθθαδαῖς εἰς τὰ ἐνοικηκὰ τῆς μονῆς τοῦ κυροῦ Ῥωμανοῦ καὶ ἀπὸ τοὺς

150 ἔξοπλήσεως L || 153 ὑγροπίσσιον Bonn || 154 στρογγύλα L || λινάριον ... κανάνιον Bonn || 155 καταπερίσσειαν L || 157 ὀκτώ restitui : ὑπεντικοῦτοι L πεντηροῦτο Bonn || 158 καρφίον Bonn || 161 κρίτης L || 163 καταπερισσειαν L || 168 post κ. prave iteravit ἐδόθη τὸν μόνον Ἰωακεὶμ ὑπὲρ τζικουρίων φ', Ν' L || 170 χειροφελλο L χειροφέλλον Bonn || 171 χρυσοῦ χτ' Bonn || ν : 1^ο Bonn || 172 ἐνα L Bonn || 174 καταπερισσειαν L || 175 νομίσματα restitui : om. L Bonn

91. Bolt = roll. For *panta* cf. aG *pénion* (DOI.): bobbin, spool. See *infra*

92. The figures here are difficult to compute, and do not tally with the totals at the beginning and end of this section — the sum of 320 *nn.* 4 *mil.* does not seem to fit into the overall total for Joachim's subsidy. In the Ms., the sum of 1.154 *nn.* is not preceded by the usual abbreviation for *nomismata*, and it is possible that the copyist mistook the abbreviation itself for an *α* (i.e. the numerical figure 1,000), thus inadvertently making "154 *nomismata*" into "1,154 (*nomismata*)". I am grateful to Vincent Deroche for this sensible suggestion, although it is apparent that the figures here are too confused to arrive at any definitive interpretation at present.

93. Or 'in the dwellings' of the monastery etc. The meaning of *enorkéka* remains unclear.

94. *Anagnapharos* = carder or fuller; in the context draper (preparer of coarse cloth) seemed preferable.

market,⁹⁵ <and> from various persons, for all three,⁹⁶ 320 *nn.* 4 *mil.*; which were bought under the supervision of the *sakellarios* and the *vestiarion*.

33 nn. were given for the wages of the sailmakers who made the said sails along with the purchase of thread. <***> nn. was given for the purchase of wooden spars^v for the said 11 vessels.

3 nn. was given for the purchase of cordage for the boltropes and footropes of the said 11 sails.⁹⁸

62 *nn.* was given for the purchase of 14 screens, the other 19 being provided from those deposited in the *eidikon*. 7 *nn.* 0 *mil.* was given for the oiling of the screens. 9 *nn.* 6 *mil.* was given for blocks for the said 11 vessels. 5 *nn.* was given for the purchase of 385 oars. 11 *nn.* was given for shipwrights' work, for split timbers and planking and the rest.⁹⁹ 33 *nn.* was given for the caulking of these same 11 vessels.

28 nn. 12 mil. was given for the purchase of a further 100 bolts of canvas¹⁰⁰ given as extra supplies for the same armament. 88 nn. 0 mil. was given for the purchase of 122 oxhides.

28 nn. 0 mil. was given for the purchase of 200 felts given likewise as extra supplies to the imperial fleet. 166 nn. 6 mil. was given for the purchase of 1,000 goats' hides at 6 per *nomisma*.¹⁰¹ 16 nn. 6 mil. was given for the purchase of light cables and hide strips¹⁰² and the remaining expense, and 183 nn. 0 mil. for making 100 goats' hide coverings. 34 nn. was given for the purchase of 200 *litrai* of tin.

18 *nn.* was given for the purchase of 200 *litrai* of copper. 12 *nn.* was given for the purchase of 100 large round spades. 23 *nn.* was given for the purchase of 100 smaller spades. 33 *nn.* was given for the purchase of 200 tubs. 40 *nn.* was given for the purchase of 2,000 levers/shafts. 14 *nn.* was given for the purchase of 1,000 shovels. 5 *nn.* was given for the purchase of 50 orher, smaller pitchers. 30 *nn.* 0 *mil.* was given for the purchase of anorher 200 *litrai* of tin which was given to Michael the metalworker for soldering/fixing various parts of the siphons of the imperial fleet. 5 *nn.* for the purchase of 100 *litrai* of wax. 4 *nn.* for the purchase of 200 *litrai* of unworked lead. 24 *nn.* was given for the purchase of various (items) of bronze which was given for the service of the *drouggarios* of the fleet, for 2 large cauldrons, 2 other medium cauldrons, 4 burnished earthenware cauldrons, 2 large pitchers, 2 large skillets, a burnished bronze urn, 2 burnished flasks, 2 water-pitchers and basins.^{10,3} Altogether the total expenditure 21 *litrai*, 57 *nn.* 6 *mil.* in gold.

95. For this expression, see *Three Treatises*, [C] 290, 292 and commentary, p. 230.

96. The Ms. has Γ. Reiske (*De cer.*, 2, p. 796-797) suggests a Π, i.e. 80. More probably, this is an abbreviation for the gen. pl. form of the number 3, referring to the 3 sources from which the canvas was obtained: in drawing up his narrative from a simple list, the copyist has failed to supply the connecting καὶ and the διο, which his original document probably did not include.

97. See Koukouli S., *BBP* 5, 354-355.

⁹⁸ Maritime terminology prefers 'cordage' to 'ropes', which is literally what the text says. On the two technical terms, see *infra*.

99. Ναυπήγησις in the sense of work on ships rather than shipbuilding as such. The rest is more ambiguous. I have taken περιβόλος (not περιβόλη) in its meaning of a covering placed around something, a cage/case (see LSJ, s.v.), so that the work here is to do with the repairs to the planking and decking of the vessels in question.

ἀναγναφαρίους τοῦ φόρου <καὶ> ἀπὸ διαφόρων προσώπων <διὰ> τῶν τριῶν νομ. τκ' καὶ δ', τὰ καὶ ἀγορασθέντα κατενώπιον τοῦ σακελλαρίου καὶ τοῦ βεστιαρίου.

έδόθησαν ὑπὲρ μισθοῦ τῶν ἀρμενοφάφων τῶν καμόντων τὰ αὐτὰ ἀρμενα σὺν 180 ἀγορᾶς νήματος,, λγ'. ἔδόθη ὑπὲρ ἀγορᾶς ἐνλυκεραίων λόγῳ τῶν αὐτῶν ια' καραβίων,,
<...>

ἔδόθη ὑπὲρ ἀγορᾶς σχοινίων λόγῳ κρυπτῶν ἐπικήρων καὶ ποδιοδρόμων τῶν αὐτῶν ια' ἀρμένων,, γ'.

184 ἔδόθη ὑπὲρ ἀγορᾶς διφθερίων ιδ': : ξβ', ὡς τῶν ἐτέρων ιθ' διφθερίων διθέντων ὑπὸ Bonn 6⁷⁵ τῶν | ἀποκειμένων εἰς τὸ εἰδικόν. ἔδόθη ὑπὲρ ἀλειφῆς τῶν αὐτῶν διφθερίων,, ζ'. ἔδόθη ὑπὲρ ἀγορᾶς μαγγάνων λόγῳ τῶν αὐτῶν ια' καραβίων,, θ'. <Ζ> ζ'. ἔδόθη ὑπὲρ ἀγορᾶς κωπίων τπε',,, ε'. ἔδόθη ὑπὲρ ναυπηγήσεως τῶν αὐτῶν ια' καραβίων τῶν τε σχιστῶν καὶ τῶν περιβόλων αὐτῶν καὶ λοιπῶν,, ια'. ἔδόθη ὑπὲρ καλαφατήσεως τῶν αὐτῶν ια' καραβίων,, λγ'.

190 ἔδόθη ὑπὲρ ἀγορᾶς ἐτέρων πανίων ῥασιακῶν ρ' τῶν διθέντων κατὰ περίσσειαν εἰς τὸν αὐτὸν στόλον,, κη'. Ζ ιβ'. ἔδόθη ὑπὲρ ἀγορᾶς βυρσαρίων βοείων ρκβ',,, πη' ν.

ἔδόθη ὑπὲρ ἀγορᾶς κεντούκλων σ' τῶν διθέντων κατὰ περίσσειαν ὄμοιώς εἰς τὸ βασιλικὸν πλοῖμον,, κη' Ζ. ἔδόθη ὑπὲρ ἀγορᾶς κιλικίων,σ τῶν ζ',,, ρξζ', Ζ ζ'.

L 226 195 ἔδόθη ὑπὲρ ἀγορᾶς σχοινίων || λεπταρίων καὶ χαρταρίων καὶ λοιπῆς ἔξοδου,, ις' Ζ ζ'. λόγῳ πουῆσαι ἀτεγίων κιλικίων ρ',,, ρπγ' ν. ἔδόθη ὑπὲρ ἀγορᾶς κασπιτέρου λίτραι σ',,, λδ'.

200 ἔδόθη ὑπὲρ ἀγορᾶς χαλκώματος λίτραι σ',,, ιη'. ἔδόθη ὑπὲρ ὀγορᾶς σκαφιδίων στρογγύλων μεγάλων ρ',,, ιβ'. ἔδόθη ὑπὲρ ἀγορᾶς σκαφιδίων μικροτέρων ρ': : κγ'. ἔδόθη ὑπὲρ ἀγορᾶς καλδαρίων σ'. : λγ'. ἔδόθη ὑπὲρ ἀγορᾶς καπουλίων β',,, μ'. ἔδόθη ὑπὲρ ἀγορᾶς πτυαρίων,α',,, ιδ'. ἔδόθη ὑπὲρ ἀγορᾶς ἐτέρων κάδων μικροτέρων ν'. : ε'. ἔδόθη Bonn 6⁷⁶ 205 ὑπὲρ ἀγορᾶς ἐτέρου κασπιτέρου λίτραι σ' τὰ διθέντα Μιχαὴλ χυτῇ λόγῳ | κατακολλήσεως διαφόρων ἔργων τῶν σιφουνίων τοῦ βασιλικοῦ πλοῖμον,, λ. Ζ ν. ἔδόθη ὑπὲρ ἀγορᾶς κηρίου λίτραι ρ',,, ε'. ἔδόθη ὑπὲρ ἀγορᾶς μολιθίου ἀργοῦ λίτραι σ',,, δ'. ἔδόθη ὑπὲρ ἀγορᾶς χαλκώματος διαφόρου τῷ διθέντι λόγῳ τῆς ὑπουργίας τοῦ δρουγγαρίου τοῦ πλοῖμον ὑπὲρ κακαβίων μεγάλων β'. καὶ ἐτέρων κακαβίων μεσαίων β', καὶ χυτροκακαβίων γανωτῶν δ'. καὶ κουκουμίων μεγάλων β'. καὶ τιγανίων μεγάλων β'. χαλκοσταμνίου γανωτοῦ ἐνός, φλασκίων γανωτῶν β'. χερνιένιστων β',,, κδ'. ὄμοι τὸ πᾶν ἔξοδος χρυσοῦ λίτραι κα',,, νζ'. μιλιαρήσια ζ'.

177 καὶ supplevi || δια supplevi || τριῶν scripsi : I 1 II Bonn || 181 post,, spatium quattuor fere lit. I || 186 Ζ supplevi : 0 ι. Bonn || 188 καλαμφατισται L || 190 κατο I. || καταπερίσσειαν L || 191 βισαρίων L || 192 καταπερίσσειαν L || 195 κιλικίων L || καπιτερο I || 197 χολωματος L ut semper || 201 καπιτερον L || κατακολίσει. I. || 205 μεσων L || 206 κατροκακαβίων I

100. It is not clear whether the number 100 refers to the number of cubits of canvas (see above), or to the number of bolts of canvas, which seems more likely.

101. i.e. at 2 *miliarēsia* per hide, since there were 12 *miliarēsia* per *nomisma*. In fact, 1,000 hides at 2 *mil.* each = 166 *nn.* 8 *mil.*

102. The term *chartaria* remains unclear. It is used of sheets of anything, such as lead or leather.

103. See J. DU HUAR, 'Materialien aus den Papyri zur byzantinischen Lexikographie', in *Studien zur byzantinischen Lexikographie*, ed. E. Trapp et al., *Byzantina Vindobonensia* 18, Vienna 1988, 47-69, at 68-69; and KATHANI, 'Sprache', col. 533.

Spartum silk strings were contributed from the *eidikon*; other small silk strings were given for the bow-ballistae. 5 sheets of lead each for the bilges of the *chelandia* of the imperial fleet were likewise given by the *eidikon*, 100 sheets, making 3,000 *litrai* by weight. The *drouggarios* of the fleet was given 3,000 swords, 3,000 shields, 3,000 spears, 240,000 arrows, and another 4,000 arrows, or flies, for the bow-ballistae, from the lower armoury.¹⁰⁴

What was given as extra items from the department of the *Vestiarion* to the *drouggarios* of the fleet for the Cretan expedition

150 crowbars, 130 bolts/lynch-pins for the *chelandia*, 12 iron slings, 240 mallets, 300 martocks, 12 large iron bolrs for the wooden rower, 15 iron clamps, 30 iron shackles, 15 bolts, 8 braziers, 10 weighrs, 24 hand weights, 4,000 round/flat-headed nails, 2,000 claw-nails, 5,000 4-finger (7.8cm) nails, 8,000 fasrening nails, 6,000 decking nails, 15 bronze boathooks,¹⁰⁵ 30 tinned bronzes, 30 bronze trays,¹⁰⁶ 30 bronze tubs,¹⁰⁷ 15 bronze hoists,¹⁰⁸ 60 anchor-cables, 140 grapnel cables,¹⁰⁹ 140 spartum cables, 220 light-weight ropes, 300 mooring cables, 100 coiled ropes,¹¹⁰ 2,000 *litrai* of hemp, and 80 *nn.* instead of 7,000 *litrai* of linen; and 23 *nn.* for the purchase of 10,000 (*litrai*) of pitch, 300,000 (*litrai*) of liquid tar, and 100,000 (*litrai*) of cedar resin
 3,000 *litrai* of unworked iron
 10 large iron rams

Bonn 67

2

L 227r

2

What was given from the *Koitōn* to the *drouggarios* of the fleets for the expedition against Crete

6 plain inner garments of high value
 likewise 6 pairs of leggings
 6 undershirts and breeches
 6 purple-dyed hoods

2

2

What was given from the *Eidikon* to the same *drouggarios* of the fleets for the said expedition

10 inner garments of 10 *nomismata* value tailored in the Saracen style¹¹¹
 10 inner garments of 8 *nomismata* value
 20 inner garments of 7 *nomismata* value
 40 pairs of leggings for inner garments of 10, 8 and 7 *nomismata* value¹¹²

Bonn 6

104. See *infra* and N. OIKONOMIDIS, 'Το κάτω ἀρματέντων', *Ἀρχεῖον Πόντου*, 26, 1964, 193-6.

105. In aG = javelin, dart; in mG nautical terminology = boathook: long wooden pole with hooked or pointed metal tip for fending off boats from shore or other vessels. See, e.g., I. DR. STAMAKOS, *Ἄρειον τῆς Νεολλησπόντικης γλοσσοῦ*, Athens, 1971, 1, 128.

106. Cf. *drax/dragma*, a small cup or a measure (cupful). A *paradraktion* ought to be something accompanying such items, and 'tray' is a possibility, although in the context of this predominantly nautical list, this may seem unlikely. See *infra*.

107. Cf. L 10, *Iact.*, xv. 85 for 'closed vats' (*bouittha teletai*) to contain water.

108. See *infra*.

109. See *infra*

έδόθησαν παρά τοῦ εἰδικοῦ κόρδαι μεταξωταὶ σπαρτίναι. έδόθησαν ἔτεραι κόρδαι
 210 μεταξωτὰ μικρῷ λόγῳ τῶν τοξοβολίστρων. έδόθη ὁμοίως παρὰ τοῦ εἰδικοῦ λόγῳ τῶν
 κολυμβωμάτων τῶν χελανδίων τοῦ βασιλικοῦ πλοιάμου ἀνὰ χαρτίων ε' μολίθιν χαρτίσ ρ'.
 σταθμίον λίτραι ,γ. έδόθη τὸν δρουγγάριον τοῦ πλοιάμου ἀπὸ τοῦ κάτω ἀρμαμέντου
 σπαθία ,γ. σκουτάρια ,γ. κοντάρια ,γ. σαγίτας χιλιάδες σμ', ἔτερας σαγίτας λόγῳ τῶν
 τοξοβολίστρων μῆνας χιλιάδες δ' .

215 **Τὰ ἀπὸ τοῦ σεκρέτου τοῦ βεστιαρίου δοθέντα τῷ δρουγγαρίῳ τῶν πλοίμων
 κατὰ περίσσειαν ὑπὲρ τοῦ ταξειδίου τῆς Κρήτης**

Bonn 67^r σείστας ρν', περόνας τῶν χελανδίων ρλ', σφενδούρα | σιδηρᾶ ιβ', τζόκους σμ'.
 τζαπία τ', περόνια σιδηρᾶ μεγάλα τοῦ χυλοκάστρου ιβ', πάγουροι σιδηροί ιε'. φελλία
 σιδηρᾶ λ', δάκτυλοι ιε', κατζία η', βαρέας ι', χειροθαρέας κδ', καρφίν γυραρικῶν χιλιάδες
 220 δ', καρφίν ἀρπάγιν χιλιάδες β', τετραδακτυλαῖνον ,ε, τῆς παρηλώσεως ,η, στεγαδερὸν ,ς.
 φώντια χαλκᾶ ιε', γανωτὰ χαλκᾶ λ', παραδρόκτια χαλκᾶ λ', βουτία χαλκᾶ λ', ἀναγοντίτεα
 L 222^r χαλκᾶ ιε'. || σχοινία σιδηρούρα ξ', περιπετόμενα ρμ', σπαρτίνας ρμ', λεπτάρια σκ'.
 σκαλοδέματα τ', κουβάρια ρ', κανάβι λίτραι ,β, καὶ ἀντὶ λιναρίου χιλιάδων ζ', , π', καὶ
 ὑπὲρ ἀγορᾶς πίσσης χιλιάδες ι', καὶ ὑγροπισσίου χιλιάδες τ'. καὶ κεδρέας χιλιάδες ρ' ,,
 225 χγ',
 σίδηρον ἀργὸν λίτραι ,γ.
 κριοὶ σιδηροὶ μεγάλοι ι' .

**Τὰ ἀπὸ τοῦ κοιτῶνος δοθέντα τῷ δρουγγαρίῳ τῶν πλοίμων εἰς ἔξιδον τοῦ
 κατὰ τῆς Κρήτης ταξειδίου**

230 ίμάτια ἐσωφόρια μεγαλόζηλα λιτὰ ζ'.
 τουβία ὁμοίως ζυγάς ζ'.
 ύποκαμισοθράκια ζ',
 ἐπιφριπτάρια δέξα ζ'.

**Τὰ ἀπὸ τοῦ εἰδικοῦ δοθέντα τῷ αὐτῷ δρουγγαρίῳ τῶν πλοίμων ὑπὲρ τοῦ
 αὐτοῦ ταξειδίου**

Bonn 67^s ίμάτια ἐσωφόρια κατὰ Σαρακηνοὺς ἐφραμμένα δεκά|λια ι'.
 ίμάτια ἐσωφόρια δέκταλια ι',
 ίμάτια ἐσωφόρια ἑπτάλια κ',
 τουβία ἀπὸ ἐσωφορίων δεκαλίων καὶ δέκταλίων καὶ ἑπταλίων ζυγαὶ μ' .

211 καλυνθομάτων L Bonn || μολιβίου Bonn || 212 στι L || ὃπο τοῦ κατεπάνω τοῦ ὄρματος Bonn ||
 216 καταπερισσειαν I || 217 σφενδόνοι L || 219 καρφίου Bonn || 220 καρφίου ἀρπάγιου Bonn || 221 γινοτι
 L || 222 σιδηρούρα Bonn || 223 καναβίου Bonn || ἀντιλευαρίου L || 233 ἐπεριπτάριο L Bonn

110. See *mēta* and cf. mG κουβάρι, spool, reel; D. P. ΚΙΑΝΙΖΙΑΝΟΣ, Το Θεσσαλικό γλωσσικό ίδιωμα, Athens 1995, 213, s.v. κοντόρι.

111. For all these technical terms, see *Three Treatises*. [C] 223-260, 289-299.

112. Under and inner garments were frequently accompanied by sets of leggings.

100 Egyptian tailored striped garments	240
100 silken garments ¹¹³	
100 cotton garments	
140 undershirts and breeches of better quality	
100 undershirts and breeches of second quality	
40 hoods/capes of better quality	
200 hoods/capes of second quality	
100 hoods/capes of third quality	
100 (pairs of) striped Egyptian leggings	
100 pairs of silken leggings	
100 (pairs of) cotton leggings	
40 belts	250
40 pairs of boots of better quality	
200 pairs of boots of second quality	
100 pairs of boots of third quality	
Stages of the journey¹¹⁴	
From the God-guarded City to Herakleia, ¹¹⁵ 60 miles	
From Herakleia to Prokonesos, ¹¹⁶ 40 miles	
From Prokonesos to Abydos, ¹¹⁷ 100 miles	
From Abydos to Ta Peukia, ¹¹⁸ 12 miles	
From Ta Peukia to Tenedos, 18 miles	
From Tenedos to Mitylene, 100 miles	26
From Mitylene to Chios, 100 miles	
From Chios to Samos, 100 miles	
From Samos to Phournoi, ¹¹⁹ 30 miles	
From Phournoi to Naxos, 70 miles	
From Naxos to Ios, 30 miles	
From Ios to Thera and Therasia 20 miles	
From Thera and Therasia to Ta Christiana, ¹²⁰ 20 miles	
From Ta Christiana to Dia, ¹²¹ 80 miles	
From Dia to Crete, 12 miles.	
Altogether 792 miles. ¹²²	27

113. *Koukoulariko* in mG normally means silken, i.e. in style or with silken effect, rather than 'hooded' (from *koukoullion*, Lat. *cucullum*, cf. *cucullarius*, hooded/cowled). In this context, although 'hooded' is possible, I have preferred 'silken' to contrast with the immediately following 'cotton'. Note the contrast between 'silken' and 'cotton' leggings below: 'hooded leggings' would make little sense! See KUHLN, 'Sprache', col. 509; 524; 535.

114. On this section and its antecedents, see *infra* and VASILEV, *Byzance et les Arabes*, ii, 1, p. 209; 340.

115. Modern Marmara Ereğli.

116. Modern Marmara.

117. Close to modern Çanakkale.

240 ίμάτια λωρωτὰ Αἰγύπτικα ἐρραμμένα ρ',
 ίμάτια κουκουλάρικα ρ',
 ίμάτια βαμβακερὰ ρ',
 ὑποκαμισοθράκια διαφορώτερα ρμ',
 ὑποκαμισοθράκια δεύτερα ρ'.
 245 ἐπιφριπτάρια διαφορώτερα μ',
 ἐπιφριπτάρια δεύτερα σ',
 ἐπιφριπτάρια τρίτα ρ',
 τουδία λωρωτὰ Αἰγύπτικα ρ',
 τουδία κουκουλάρικα ζυγὰς ρ',
 250 τουδία βαμβακερὰ ρ'.
 ζωστρία μ'.
 ὑποδήματα διαφορώτερα ζυγὰς μ',
 ὑποδήματα δεύτερα ζυγὰς σ',
 ὑποδήματα τρίτα ζυγὰς ρ'.

255 Σταδιοδρομικόν

'Απὸ τῆς θεοφυλάκτου πόλεως εἰς Ἡράκλειαν μίλια ξ'.
 ἀπὸ Ἡράκλείας ἔως Προικονήσσου μίλια μ'.
 ἀπὸ Προικονήσσου ἔως Ἀθύδου μίλια ρ'.
 260 ἀπὸ Ἀθύδου ἔως Τὰ Πευκία μίλια ιβ'.
 ἀπὸ Τὰ Πευκία ἔως Τενέδου μίλια ιη'.
 ἀπὸ Τενέδου ἔως Μυτιλήνης μίλια ρ'.
 ἀπὸ Μυτιλήνης ἔως Χίου μίλια ρ'.
 ἀπὸ Χίου ἔως Σάμου μίλια ρ'.
 ἀπὸ τῆς Σάμου ἔως τοὺς Φούρνους μίλια λ'.
 265 ἀπὸ τοὺς Φούρνους ἔως Ναξίας μίλια ο'.
 ἀπὸ Ναξίας ἔως τὴν "Ιον μίλια λ'.
 ἀπὸ τὴν "Ιον ἔως τὴν Θήραν καὶ Θηρασίαν μίλια κ'.
 ἀπὸ τὴν Θήραν καὶ Θηρασίαν ἔως τὰ Χριστιανὰ μίλια κ'.
 270 ἀπὸ τὰ Χριστιανὰ ἔως τῆς Δίας μίλια π'.
 ἀπὸ τῆς Δίας ἔως Κρήτης μίλια ιβ'.
 ὅμοιοι μίλια φοβ'.

245 ἐπαιριπτάρια L Bonn || 246 ἐπιφριπτάρια L Bonn || 247 ἐπιφριπτάρια L Bonn || 252 διαφορώτερα L || 257 προικονήσσου L || 259 Γαπευκία L Bonn || 260 ιη' L post corr. : κ' aut κη' L ante corr. η' Bonn || 261 μυτιλήνης).

118. Perhaps modern Tekke Burnu, at the head of the Gallipoli peninsula.

119. Modern Phournoi, East of Ikaria.

120. Probably modern Anaphi.

121. Modern Dia, North of Iraklion.

122. i.e. ca. 1,246 km. See SCHUBACH, *Metrologie*, 35-36: the Roman/Byzantine mile = 1574.16 m.

COMMENTARY

1. Introduction

Chapters 44 and 45 of the second book of the *De ceremoniis* have long been exploited as valuable sources of information for the two unsuccessful expeditions mounted against the Cretan Saracens in 911 and 949, as well as for the expedition to southern Italy in 935, and for the history and structure of the tenth-century Byzantine army and navy. The two chapters contain also a vast wealth of technical information connected with both the military and, more particularly, the naval technology of the period, as well as with the financing and logistical organisation of an imperial expedition, information which serves to complement, or to correct, that derived from the other available sources for the period.¹ In the following I shall analyse these texts from the point of view of their internal structure and context, on the one hand and, on the other, in respect of what they tell us about the imperial military and fiscal administration and related issues.

It was pointed out long ago that Chapters 44 and 45 could not have been an integral element in a 'Book of Ceremonies' of the sort represented by the much more coherent and consistent first book of the Reiske edition. On the contrary, J.B. Bury

1. Apart from the chronicle literature and historiography of the period, which contains a great deal of relevant information, the main sources of evidence for military administration and organisation are the sigillographical record and lists of precedence, together with the information from Arab geographers' descriptions of the Byzantine empire, on the one hand, and the various treatises of the later ninth and tenth centuries dealing with warfare on land and at sea, and military and naval organisation. Problems of reliability, sources of information and related issues in connection with the former group of sources (in particular, the Arab geographers) will be dealt with in the discussion below, as appropriate. Among the more important texts from the latter tradition are (i) the so-called *Tactica* ascribed to Leo VI; (ii) a mid-tenth-century treatise known as the *Syllogè taktrikón*; (iii) the treatise on skirmishing or guerilla tactics, written by a close associate of the Phocas clan in the 950s or 960s: *De velitatione*; (iv) an anonymous treatise on campaign organisation, dating probably from the reign of John Tzimiskes or Basil II: *De re militari*; (v) the so-called *Praecepta militaria* ascribed to Nicephorus II; (vi) the *Tactica* of the general Nicephorus Ouranos. In addition, there are a series of treatises dealing with siege warfare or artillery: for the latter, see (vii) the treatise on artillery ascribed to Heron of Byzantium (mid-tenth century; a new edition is in preparation by D. Sullivan); and on siege warfare *De obsidione toleranda*. For naval warfare (including the section on naval warfare in the *Tactica* of Leo, the treatise dedicated to Basil the *parakoimômenos*, and the naval sections of the *Tactica* of Nicephorus Ouranos), see the edited collection in A. DIN, *Naumachica*, Paris 1943. Quite apart from these are treatises dealing with military expeditions: see HALDON, *Three Treatises*; and older treatises such as the *Strategikon* of Maurice (late sixth century), upon which substantial sections of several of the later treatises are based. The relationship between these texts, and several others not mentioned here, is complex and is still the subject of discussion. In particular,

stressed that Chapters 40 - 57 represented material collected from a dossier of miscellaneous pieces, originally intended for different — and now unknowable — purposes, one of which may have been, however, a treatise on military administration.² Thus Chapter 50 contains the list of salaries of thematic *stratégoi*, and regulations for liability for or exemption from *strateia*; and part of Chapter 49 deals with the arrangements for settling Saracen prisoners of war on land in the provinces, the nominal value of the landed property of different categories of *stratiōtai* and aspects of the process called *adoreia*, by which stratiotic holdings were temporarily exempted from the fiscal burden attached to them.³ But whether these sections were actually intended for a specific 'treatise' seems doubtful, given the ad hoc nature of the process by which the various parts of these dossiers were excerpted and incorporated by the redactor of the Leipzig manuscript into the collection. On the one hand, it is quite possible that these details were intended as an illustrative accompaniment to the material collected in the *Three treatises on imperial military expeditions*, which were incorporated at the beginning of the Leipzig manuscript, or perhaps just treatise B, which circulated separately in the codex *Mediceo-Laurentianus Plut.* 55, 4, a collection of Hellenistic, later Roman and Byzantine tactical handbooks.⁴ Equally, on the assumption that the redaction may reflect the interests and contemporary concerns of a court official such as Basil Lekapenos, the *parakoimōmenos* and later *proedros* of the senate, during the 960s, the incorporation of such material, certainly as far as the Cretan expeditions are concerned, may just as well reflect a desire to collect information regarding earlier expeditions in order to compile a document dealing with the military exploits of the emperor Nicephorus II, especially in view of his successful conquest of the island in 961.

This is certainly true of the collection on imperial military expeditions, the last redaction of which is primarily concerned with the structure, provisioning and administration of the imperial baggage-train, a matter of especial concern to Basil, who in 971 campaigned with Bardas Skleros under the command of the emperor John

the tendency to copy or borrow material from ancient, Hellenistic and Roman writers such as Aeneas, Arrian, Polybius and many others, together with the frequent misunderstanding and garbled rendering of technical details which the original texts contained, makes the Byzantine treatises particularly treacherous sources at times. The best general survey of the manuscript tradition remains A. DAIN, 'Les stratéquistes byzantins', *TM* 2, 1967, 317-392; but see also, for context and historical development of the genre, H. HÜNGER, *Die hochsprachliche profane Literatur der Byzantiner. Handbuch der Altertumswissenschaft* xii. 5., Munich 1978, 'Kriegswissenschaft', 323-340. These problems are especially apparent in respect of technical information; but the point applies equally to issues of military equipment and armament, unit and divisional structure, tactical arrangements, and so forth. Each case needs to be taken on its merits and within a broader and comparative context, before the information in question can be taken at face value. See, for example, the comments in P. SCHRFNER, 'Zur Ausrüstung des Kriegers in Byzanz, im Kiewer Rußland und in Nordeuropa nach bildlichen und literarischen Quellen', in *Les pays du nord et Byzance (Scandinavie et Byzance). Actes du colloque nordique et international de Byzantinologie tenu à Upsal 20-22 avril 1979*, R. Zeitler ed., *Acta Universitatis Upsaliensis, Figurata. Nova series* 19, Uppsala 1981, 215-236, at 215-217.

2. See BURY, 'Ceremonial Book', 223-227.

3. §50: *De cer.*, 696.10 - 699.5; part of §49: *ibid.*, 694.22 - 696.9. On *adoreia* and associated processes in the tenth century, see D. GORIĆKI, 'The *Strateia* of Constantine VII: the Legal Status, Administration and Historical Background', *BZ* 82, 1989, 157-176, esp. 169-171; and HALDON, 'Military Service', 30ff.

4. See HALDON, *Three Treatises*, 38-39 with literature. The Ms. was probably compiled in the early 950s.

Tzimiskes against the Russians, and with responsibility for the baggage- and siege-train.⁵ While Constantine VII was probably the motive force behind the final version of the longer of the three treatises on imperial expeditions, it was probably Basil who had the material collated, probably in connection with his own military concerns:⁶ in 958, and together with the general John Tzimiskes, Basil was involved with the successful capture of the city of Samosata. He was also actively interested in the reconquest of Crete before his fall from grace in 959, as the dedicatory verses at the beginning of a treatise on naval warfare suggests.⁷ I will deal with the question of sources and authorship of the texts concerned in the concluding section of this paper.

Although all those who have discussed the origins and date of the *Book of Ceremonies* have noted the existence of these chapters and the value of the information they contain, no-one has attempted a full analysis until now. Thus partial use of the information has been made, and by several different scholars, from the point of view of weaponry and military technology, clothing, tactical organisation, naval warfare and technology, all of which has been important in expanding our understanding of these elements of Byzantine culture and state organisation.⁸ Yet the nature of the information embodied in the text, the fact that there are a number of apparent inconsistencies within it, and the possible different sources and purposes of the information, have remained largely undiscussed. Given the implications for any interpretation of this material, especially in respect of the military administration of the period, this is an important omission.

Chapters 44 and 45 of Book II occupy pp. 651.14 - 664.2, and pp. 664.4 - 678.10 of the Bonn edition⁹ respectively, being fols. 220r - 227r of the Leipzig manuscript (L). The material is presented in the following order:

Bonn edn. Cap. 44

- (i) various sections on the expedition to Crete under Himerios in 911 (Bonn 651.14 - 660.12 = L 220r 1 - 222r 16) (henceforth *document I*)

5. See, for sources and discussion, BROKAAR, 'Basil Lacapenus', see 222.

6. After the death of Constantine VII and accession of his son Romanus II in November 959 Basil was excluded from access to imperial affairs and, presumably, archival sources, so that any work he may have commissioned or carried out himself must have been before this time, or after his return to favour upon the accession of Nicephorus II in March 963. See BROKAAR, 'Basil Lacapenus', 216-217. As I have argued elsewhere, following the results of the work of O. Kresten, Basil's military involvements may have been the stimulus for the inclusion in the Leipzig manuscript of the treatises on imperial military expeditions commissioned by Constantine VII: see HALDON, *Three Treatises*, 37 and n. 8.

7. See BROKAAR, 'Basil Lacapenus', 215; and cf. *Naumachica*, 5. tit. (*Ad Basiliom patricium Naumachika*).

8. The most detailed accounts: VAN DER BYSTANDT, *Byzance et les Arabes*, ii, 1, 200 - 207 (911) and 333-340 (949) (brief description of the ships, equipment and troops); AHRWILHEIMER, *Mer*, 397-407 (crews and marines); 408-418 (on types of vessel); HINDY, *Studies*, 2681. (on the gifts sent with the expedition of 935); most recently on the numbers and organisation of the military forces: TRENDLE, 'The Army'. Some of the information given in the *De Ceremoniis* is also discussed by EICKHOFF, *Seekrieg*, 81f. (marines, crews), 87f. (equipment), and 135-151 (ships).

9. Henceforth referred to as "Bonn", and not "Reiske": although the Bonn edition reprints on the whole Reiske's text, it introduces significant changes; please see *supra* the contribution of G. Dagron.

(ii) on the ships and soldiers sent on the expedition to Italy in 934 and 935, under two separate headings (Bonn 660.13 - 661.6 = L 222r 17 - 28; and Bonn 661.7 - 662.11 = L 222r 28 - 222v 20) (*documents 2 and 3*)

(iii) on the rates of pay for soldiers and officers of the *themata* on the expedition to Crete of 949 (Bonn 662.11-664.2 = L 222v 21 - 223r 21) (*document 4a*)

Bonn edn. Cap. 45

(i) various sections on the expedition to Crete of 949 under Constantine Goggyles, including also extensive lists of items of naval and other equipment for both soldiers and vessels (Bonn 664.4 - 678.22 = L 223r 22 - 227r 31) (*document 4b*)

As with other sections in Book II, the sub-division of the material in the manuscript is not entirely consistent.¹⁰ The various sections are separated by headings in upper case characters which run on from the previous line and into the next, so that — as throughout the Ms. — the copyist gave no thought to the presentation of the material by content or category. This has meant a certain arbitrariness in Bonn's treatment of the text. The section on the pay for the thematic fleet in 949, which immediately follows the information on the Italian campaign of 935, and precedes the main section on the 949 expedition, was connected by Bonn with the 911 expedition (or so its incorporation into Bonn's Chapter 44 would imply) rather than that of 949. It was placed here presumably because the redactor of the documents either did not care or did not understand where it belonged; and perhaps more significantly because that reflected the order in which the dossier from which the material came — collected at an earlier stage when the material had been intended for a somewhat different context — so that the copyist of L merely reproduced the material as it was handed to him, without checking further for consistency or internal order. This is hypothetical, but it fits what is otherwise known of the redactor's working methods;¹¹ either way, Bonn's artificial chapter division has obscured the relation between the two collections of material for the 949 expedition.

2. The expeditions

Before commencing the detailed analysis of the text, a brief account of the three military undertakings and their aims will be helpful in establishing the context. Two sets of documents concern expeditions to Crete. The island had been lost between 826 and 828 to Andalusian raiders who, having been expelled by the Umayyad emir in Spain, had seized Alexandria, only to be driven out in 825, from where they sailed north to attack and capture Crete;¹² although the Byzantine fleet did respond (a fleet of some

10. See BUR, 'Ceremonial book', 225, or chapters 40 and 41, for example.

11. See in general BUR, 'Ceremonial Book'.

12. GENIUS, 46-48; TH. CONI., 77; *De adm. imp.*, 1 §22.43-48. See AHRWEILER, *Mer*, 93ff; VASILEV, *Byzance et les Arabes*, 1, 55; H. KENNEDY, *The Early Abbasid Caliphate. a political history (750-833)*, London 1981, 169-170; CHRISTIDES, *Conquest of Crete*, 85ff. General context of the expeditions in this period and the maritime confrontation between Byzantium and Islam: PRYOR, *Geography, Technology and War*, 102-111; LEWIS, *Naval Power*, 132-182; CHRISTIDES, 'Raids of the Moslems'. Naval organisation: AHRWEILER, *Mer*, 93-135; ECKHOLM, *Seekrieg*, 82-113.

70 vessels together with transports for the thematic soldiers was despatched, under Krateros the *stratēgos* of the Kibyrrhaiot *thema*), the empire had also to deal with the revolt of the *toumarchēs* of Sicily at the same time, a certain Euphenios, who had rebelled on discovering that he was to be arrested for a minor misdemeanour, killed the *stratēgos* Photeinos, but was in his turn defeated by one of the other garrison commanders. He fled with his ships to the Aghlabid emir Ziadat Allah, and the attack on the island thus became a combined operation. Two naval operations requiring considerable resources had to be mounted at the same time. The result was that the invaders were able to consolidate their position, so that Crete was lost until its eventual recovery in 961, serving from the time of Michael II as a base for corsairs and raiders into the Aegean and East Mediterranean basin, while the recovery of Sicily was only begun during the reign of Nicephorus II.¹³

Efforts to recover Crete began in the early 840s when, in 843/4 the *logothetēs* Theokristos recovered partial control of the island temporarily with a strong fleet.¹⁴ With help from the emir of Egypt the Saracens quickly restored their position. A second expedition was under way in 865 under the command of the caesar Bardas, but his assassination while encamped in the *thema* of Thrakesion meant its abandonment.¹⁵ Further naval expeditions were undertaken against the Cretan and Sicilian fleets and home bases during the reign of Basil I.¹⁶

The expedition of 911 remains in several respects problematic. It has been assumed by many historians that it was intended yet again to recover the island, which had within a few years of its conquest rapidly become a source of economic dislocation throughout the Aegean region, as the Continuator of the chronicle of Theophanes notes.¹⁷ According to this approach, Leo VI seems to have had more than just the eradication of the Cretan threat in mind, however, since the reports in the sources suggest a wider strategy intended both to sow divisions among the various emirates or commanders of Crete, Cyprus and the Syrian coast was undertaken, with the longer-

13. J.B. BURY, *A History of the Eastern Roman Empire from the Fall of Irene to the Accession of Basil I (802-867)*, London 1912, 287-292; 294-308; 478-480; with EICKHOLD, *Seekrieg*, 67, 133 and VASILIEV, *Byzance et les Arabes*, i, 59-61. See also E.W. BROOKS, 'The Arab Occupation of Crete', *English Historical Review* 28, 1913, 431-443; and MALAMUT, *Les îles*, 76-77. In Sicily the Byzantines were at first able to hold onto only a few strongholds and Syracuse. But the death of Euphemios and the arrival of a new *stratēgos* in 829 resulted in a series of Byzantine successes, so that by the time of Michael's death the Byzantines had the upper hand once more. The conquest of Crete was achieved much more rapidly: an initial counter-attack under Photeinos, *stratēgos* of the Anatolikoi, was a failure; and although the Byzantine fleet and army of the Kibyrrhaiot *thema* were able to register some successes on the island in 828, carelessness left them open to surprise attack, with the result that the expeditionary force was destroyed and the thematic commander, who fled to Kos, was captured and killed (sources and discussion in VASILIEV, *Byzance et les Arabes*, i, 59-61). Leo the Deacon notes an expedition to Sicily in October 964: LEO DIAC., Bonn 66-67.

14. See EICKHOLD, *Seekrieg*, 181; MALAMUT, *Les îles*, 78-79; H. AHRWEILER, 'L'administration militaire de la Crète byzantine', *Byz.* 31, 1961, 217ff.; *Mer*, 112; and for the Byzantine administration of the island during the brief period of partial re-occupation in the 840s, see also NISBETT, OIKONOMIDES, *DOSeals* II, 94, and nos. 36, 1ff.

15. TH. CONI., 204.22 - 206.22: see VASILIEV, *Byzance et les Arabes*, i, 258-260; AHRWEILER, *Mer*, 112 and n. 4; EICKHOLD, *Seekrieg*, 205f.

16. AHRWEILER, *Mer*, 113; MALAMUT, *Les îles*, 80-82.

17. TH. CONI., 81.1-5.

term purpose of re-establishing Byzantine pre-eminence at sea in the Aegean and East Mediterranean basin.¹⁸ In part, this was a response to a general increase in the threat from maritime raiding and attacks in the second half of the ninth century.¹⁹ Although the Byzantine chronicles are not explicit, the fleet appears to have set out in the summer of 911, under the command of the *patrikios* and *logothetēs tou dromou* Himerios, who had at least two major successes to his name: the defeat of an Arab fleet in either 905/906 or 908, and a major raid on the coastal regions of Syria behind Laodikeia in 910.²⁰ After a campaign of some eight months, at sea (and possibly on the island itself, during which the Roman forces, having landed successfully, were unable to capture Chandax, the chief Saracen stronghold), the fleet withdrew towards the end of April or beginning of May 912. The reasons for the withdrawal are unclear, but it has reasonably been supposed that the Syrian fleet under Leo of Tripolis and Damianos, which had been one of the probable targets of Himerios' campaign of 910, was back in action and posed a threat to the imperial forces. In the event, it was indeed this fleet which, joined by some of the Cretan ships (according to Jenkins), met and annihilated the imperial fleet off Chios. Himerios managed to escape, but was imprisoned shortly after his return by the new emperor Alexander, Leo VI having died on May 11th.²¹

There is, however, some doubt as to whether this 'Creran' expedition should actually be termed as such and treated as separate from the Syrian expedition of the previous year. As both Vasiliev and Ahrweiler have noted, the strategic dispositions in this first set of documents are more clearly associated with the Syrian theatre of operations than with Crete, of which, apart from the title, there is no mention at all in this material in respect of the campaign of 911/912 (in contrast to that for the 949 expedition).²² Neither is there any independent Byzantine or Arabic reference to such an expedition: only the continuation of the Chronicle of Theophanes (itself, therefore, suspect, since produced in the time of, and within the political-ideological

18. See the discussion in VASILIEV, *Byzance et les Arabes*, ii, 1, 208-213.

19. See AHRWEILER, *Mer*, 113.

20. VASILIEV, *Byzance et les Arabes*, ii, 1, 185f., 211-214; EICKHOFF, *Seekrieg*, 260; MAIAUCCI, *Les îles*, 82-83. For Himerios, see R. GUILLAND, 'Patriques des règnes de Basile I^{er} et de Léon VI', *BZ* 63, 1970, 300-317, at 309-310 (repr. in ID., *Titres et fonctions de l'empire byzantin*, London 1976, XI); and V. GRUMEL, 'Notes chronologiques', *EO* 36, 1937, 202-207.

21. See esp. R.J.H. JENKINS, 'The Date of Leo VI's Cretan Expedition', *Prophora eis St. P. Kyriakidēn*, Athens 1953, 277-281 (= *Hellenika* 4) (repr. in *Studies on Byzantine History of the 9th and 10th Centuries*, London 1970, XIV); also EICKHOFF, *Seekrieg*, 260f.; and *Nicholas I, Letters*, ed. and trans. R.J.H. Jenkins, L.G. Westerink, Washington D.C. 1981, xxviii and ep. 2. 30ff. VASILIEV, *Byzance et les Arabes*, ii, 1, 200-207, discusses the details of armament, numbers, pay and equipment given in the text.

22. VASILIEV, *Byzance et les Arabes*, ii, 1, 214 - 216, for the failure of the expedition and some consequences. He argues that the campaigns of 910 and 911 were part of the same grand strategy, and that Himerios sailed directly from his Syrian campaign for Crete; whereas JENKINS, *art. cit.*, argues that this is unlikely to have been the case. But see F. HILL, H. HITZENKAMPER, *TIB* 5/1, 2, Vienna 1990, 55. Vasiliev is supported by AHRWEILER, *Mer*, 113 n. 4, according to whom Himerios sailed for Syria via Cyprus and back to Constantinople, but was caught off Chios by Damianos and the other Arab naval forces. CHRISTIDES, 'Raids of the Moors', 94, similarly points to the lack of any evidence for a Byzantine landing, still less a failed siege of Chandax. If this is the case, then the title placed at the head of this material must be a later addition made as the material was edited and sorted. MAIAUCCI, *Les îles*, 83-84, remains neutral.

guidelines set down by Constantine VII) refers to the enormous expense and the numbers of men involved in the expedition of the time of Leo VI.

It is entirely possible, therefore, that there was no separate expedition to Crete in 911/912, that the Syrian campaign was planned to extend beyond its first year, and/or that Crete was included at a later stage. This possibility is increased when we examine the relative numbers of ships, soldiers and sailors involved in the expeditions of 911 and 949 (see below, section 9, i). The former consisted of some 177 warships, something over 12,000 soldiers (including, however, over 5,000 irregular Mardaires), and some 32,650 sailors (although many of the latter could also count as fighting men). In the 949 expedition, on the other hand, fewer than 100 vessels (including the lighter vessels of the Mardaites of Attalia) were involved, together with some 8,300 soldiers and about 12,500 sailors of the imperial and thematic fleets. The expedition of 949 was thus less than half the size of that of 910-911; and this may support the contention that the fleet in 910-911 was indeed involved in the sort of raiding, accompanied by military attacks on coastal installations and defences as well as towns and other settlements within striking distance, which the sources ascribe to Himerios' expedition against the Syrian littoral; in contrast, the expedition of 949, directed against Crete alone, was much less heavily-armed (although I do not think that this alone accounts for its failure, as has sometimes been suggested: bad leadership is the key in this respect). Either way, there is a strong possibility that the collection of material for 911 was so entangled by its redactor only in the time of Constantine VII or Nicephorus II, and actually represents materials dealing with the Syrian expedition of Himerios in 910-911.

Thereafter Crete fell into the background as the empire was compelled to re-assess its priorities, especially on the Balkan front; until in 949, shortly after his accession to sole power, Constantine VII himself planned to take up the challenge.²³ But this time a much smaller fleet than that of 911 was equipped. Troops were assembled both from the regular units of the *themata* and from among those especially recruited on a short-term mercenary basis, and the expedition placed under the command of Constantine Goggyles. Diplomatic activity between Cordoba and Constantinople in 947-949 may have been associated with the emperor's plans; and in spite of a somewhat doubtful prognosis received, supposedly in response to the emperor's query about the outcome of the expedition, from Paul of Latros, the fleet sailed in the summer of the year 949, indiction 7.²⁴ The outcome is well-known: the inexperienced commander, the *patrikios* Constantine Goggyles, having won an initial victory near Chandax, failed to secure his camp in the evening, with the result that in a surprise night-attack his forces were routed, his equipment and baggage-train taken, and he himself narrowly escaped.²⁵

23. See THI. CONI., 81.

24. Sources and discussion in VASILIEV, *Byzance et les Arabes*, ii, 1, 331-341; FALKENHAUSEN, *Untersuchungen*, 78f.; see also EICKHOLT, *Seekrieg*, 325. For Paul of Latros: 'Vita S. Pauli junioris in Monte Latro', ed. H. Delehaye, *An. Boll.* 11, 1892, 73-74.

25. LEO DIAC., 6-7; ZONARAS, xvi, 22; CEDRINUS, ii, 336. For a discussion of the details of disposition and numbers of ships, troops and pay given in the text, see VASILIEV, *Byzance et les Arabes*, ii, 1, 333-340; TIB 5/1, 57.

The third set of documents comes from records concerning the expeditions to Italy in 934 and 935, the first a purely military undertaking designed to re-inforce imperial authority and intentions in southern and central Italy, the second laden also with presents and other incentives addressed to Hugh of Provence, king of Frankish-controlled Italy with his seat at Pavia, in order to secure his support in an alliance against the 'rebel' Lombard princes led by Landulph of Capua and Beneventum, an alliance which was expanded in the early 940s to include joint undertakings against the Saracens at Fraxinetum in southern France.²⁶

These were not the only naval expeditions undertaken by the empire at this period, of course; but the two Cretan expeditions were certainly the most costly, as later commentators were clearly aware.²⁷ An analysis of the figures given in these three sets of documents will give us some idea of the approximate resources which the empire could afford to commit to military expeditions of this sort at this time, results which will have important implications for our understanding of the numbers and relative cost of Byzantine armies for this and other periods. I will now turn to a detailed analysis of the contents of the three sets of documents.

3. The documents

Document 1

The first document, which for convenience will be referred to henceforth as *document 1*, deals exclusively with the supposed Cretan expedition of 911 under Himerios. The title in the manuscript and in Bonn's edition reads: 'The fitting out and cost and the sum of the pay and of the army sent against the impious (island of) Crete with the *patrikios* and *logothetēs tou dromou* Himerios in the time of the Lord Leo, beloved of Christ'. The document consists, in fact, of a miscellany of material of varying status, and appears to represent different stages in the actual history of the expedition: some of the material clearly sets out what the intended numbers and quality of ships and men should be, where they should come from, and so forth; other sections seem to reflect a report or reports on what actually occurred and which soldiers participated, and what was now required or had actually been spent in terms of pay and emoluments. The information falls into five categories, the first four dealing specifically with numbers and pay, the last being a mix of information and notes about specific items. The nature of the information contained in the first four sections also suggests that it was drawn from different archival sources or collections of records. As will be seen from the critical edition, Bonn's text contains some omissions or errors, noted in the

26. RUNCIMAN, *Romanus*, 193; EICKHOFF, *Seekrieg*, 316; VASILIOS, *Byzance et les Arabes*, ii, 1, 291ff.; FAIKENHAUSEN, *Untersuchungen*, 32-33. It should be noted in passing that the reference to Lombard rebels reflects imperial political ideology and propaganda, since the regions in question had not been under Roman (Byzantine) authority for some time. Because the empire still regarded its title to Italy as legitimate, of course, political-military hostility to its rule could be seen in this light (see, for example, *De adm. imp.* §27 and comm.).

27. For the general and strategic context, see EICKHOFF, *Seekrieg*, 300ff. The advisers to the emperor Romanus II were concerned about the enormous expense of a third expedition which this emperor planned, and which took place in 961: TH. CONI., 474.14 - 475.1.

apparatus, and corrected in the discussion which follows. In addition, the original text contains a number of anomalies, the most important of which will be dealt with here.²⁸

The first section (651.18 - 652.8) is a simple list of the numbers of men from different thematic or other units: the imperial fleet, three thematic fleets (Kibyrrhaiotai, Samos and Aigaion Pelagos), and cavalry forces. Two major units which appear in the next section, the *thema* of Hellas and the Matdaites, are omitted from this first section; and the total of cavalry soldiers is given as 6,037, whereas in fact the list at this point includes only 4,037.²⁹ The missing 2,000 soldiers (from the Thrakesion) are listed explicitly only in the third section (at 655.15: see below), although they are included in the overall figure given for the imperial fleet in the second section, but apparently omitted from the final total in the third section. As we shall see, there are further anomalies or contradictions between this enumeration and the other sections. On the basis of the information contained in it, and the round figures given (except in the case of one cavalry unit, that of the Macedonian and Thracian *scholarioi*), this section appears to be a statement of intent drawn up as a guide to the appropriate authorities as to what forces would be required for the campaign. The total of soldiers and sailors given at the end of this entry is 34,037 (652.8), although in fact the actual sum of the forces listed amounts to either 34,337 (since 300 men are missing from the sub-total of 28,300 for the imperial and thematic fleets given at 652.2); or (if we deduct the 2,000 cavalrymen not listed here, but included nevertheless in the sub-total for the cavalry at 652.7) a total of 32,337.

The second section (652.9 - 654.6) is a detailed statement of all the vessels which were required for the expedition from the imperial and thematic fleets, and the numbers of men they carried. Two major types of vessel are listed for each fleet, the *dromôn*, carrying approximately 300 men, and the *pamphylos*, carrying approximately 160. Whereas the crews of the former are specified as oarsmen (230 per ship) and soldiers (70 per ship), those of the *pamphylois* are not.³⁰ At 652.14 a total for the imperial fleet of 23,002 is given, whereas the accrual total is 23,800. Here, it is likely that an original minuscule ω (=800) was mistaken for a β (=2), which can approximate in its cursive form to a μ with a short lefthand vertical stroke.³¹ Similarly at 654.4 the text lists the total of *dromônes* as 112, whereas the actual number given amounts to 102, a simple copyist's error.³² Importantly, the figures given for ships and men for the thematic fleets in this section agree with the pay lists given in the next, and reinforce the suggestion that the first set of figures given for the fleets and other units in round numbers reflects an original projection rather than the actual participants. The cavalry forces listed in the first section are not specified, but seem to be included with the imperial fleet, which is

28. These have all been discussed in detail by TRENDGOLD, 'The Army', 102-103, 124-125, with a list of suggested emendations to the text at 146. While most of these are both obvious and sensible, one or two, as will be shown below, require a degree of editorial intervention which I do not believe is warranted by what is known or can otherwise be assumed about imperial military and naval organisation at this period.

29. This total includes explicitly only 1,000 soldiers from the Thrakesion district: 652.5.

30. On types of vessel, and on the actual role of the 'oarsmen', see below.

31. As proposed by TRENDGOLD, 'The Army', 102.

32. See TRENDGOLD, 'The Army', 102.

stated to be 18,000 in strength (i.e. the 12,000 soldiers and sailors of the dromons of the imperial fleet together with the 6,000 or so cavalry soldiers; see 651.18 and 652.11; see below). But again there are a number of anomalies between the figures given for the same units in each of the first three sections, so that it remains unclear what proportion of this total is actually made up of cavalry soldiers and what of oarsmen/sailors. In addition, the theme of Hellas now appears (653.14-16), with 10 dromons and 3,000 men; as do the Mardaites (654.1-6: later specified as 'of the West': 655.4) with some 5,087 men. Finally, the totals for all these do not quite add up: the total of oarsmen is given at 654.5 as 34,000 when in fact it amounts to 34,200, while the number of soldiers is stated as 7,340 instead of the actual 7,140. The sum of the totals given at the end of the section (654.5-6) comes to 47,127.³³

The third section provides details of the *rogai* issued to the soldiers and fleets. This list seems to reflect what was actually paid, and to whom, since in several cases the figures for the numbers of soldiers or sailors, and the breakdown of types and status, are more specific than in the first two sections. In addition, with the exception of the *thema* of Hellas, the figures for all the units previously listed are given, confirming the presence and the numbers of the units in question on the campaign. Some discrepancies are evident, however.³⁴ Thus for the imperial fleet the total of officers and men comes to 12,502 (which corresponds more-or-less with the figure given for the fleet in the first section), but with an additional 1,000 men paid a flat rate *roga* of 5 *nomismata* each. But both these figures must exclude the oarsmen of the *pamphylooi* of the fleet listed at [C] 1/ii. The total figure given in section two (at 1 [C] /i in Table i) for the *dromones* of the imperial fleet, intended apparently to include the cavalry forces which were transported with them, is 18,000: 13,800 sailors or oarsmen, and 4,200 soldiers (see Table i, 1 [C] 1/i); the number of cavalry soldiers amounts to 4,037 (see Table i, 11-15 [B]), giving a total of 17,837, more or less agreeing with the overall figure. In 1 [D], pay is set out for 13,502; with the cavalry this makes 17,539. Thus the figures for the oarsmen of the imperial fleet and the cavalry soldiers they transported given in sections one, two and three appear to correspond, within a margin of some 300-500 persons. But sections 1 and 3 take no account of the 5,800 (oars)men of the 40 *pamphylooi* of the imperial fleet.

A further discrepancy occurs in respect of the numbers of cavalry soldiers: details for only 4,037 are given in section 1 (see Table i, 11-15 [B]), although a total of 6,037 appears at the end of the sub-section (Table i, 16 [B]). The combined figures for

33. This is correct, although the actual figures are made up slightly differently from those in the text. See Table i, [C] 16. Whether we are justified in emending the text, as TRIADCOUD, 'The Army', 102, wishes to do is, however, questionable, since it is entirely possible that these errors were themselves copied from the original accounts and may preserve traces of an originally more extensive, detailed or disorganised list.

34. A minor inconsistency of either arithmetic or transmission occurs at 655.8, for example, where the total pay is stated to be 5 *kenténaria*, 77 *litrai* and 42 *nomismata*, but the actual sums given amount to 2 *nomismata* less than this. The pay of the Mardaites of the West is problematic, and will be dealt with below. By the same token, Bonn's Latin interpretation of the Ms. gives an extra 1 *kenténarion* for the total pay of the Armenians of Prine and Platanion, and appears to overestimate similarly the pay of the 3,000 soldiers from the Thrakesion region: 655.15 - 656.4. The original documents probably did not contain this error, which follows from the way in which the data was copied and edited. See below.

the fleet and soldiers at 1 [C] and 1 [D] work with a total of 4,037 or so cavalry soldiers; yet at 12 [D] the cavalry soldiers from the Thrakesion theme appear 3,000 strong (the figure clearly assumed in the total given at 16 [B]), which then compromises the figures given for fleet and soldiers! The final figures given at 654.5-6 amounts to 47,127,³⁵ but the figure for the cavalry forces contained within this total cannot include the 2,000 extra Thrakesion cavalry.³⁶ The likelihood is, therefore, that although a *roga* for these soldiers was originally calculated, they did not sail on the expedition. The calculations made below in respect of the provisions and fodder collected for the expedition would appear to bear this conclusion out.

The fourth section deals with the *prochreοn* paid to certain units, but not all, for the expedition. This term represented a technical usage, and seems to have referred to cash payments made in advance of the expedition, possibly drawn against the *rogai* of the units in question. I will discuss this issue in greater detail below.³⁷ The sums given in this section appear furthermore to represent calculations of what was required and originally set aside, rather than actual payments: enough money for the 500 Armenians of Prine mentioned in the general estimates in the first section is stipulated for their *prochreοn*, for example; but from the list of *rogai* it would seem that only 400 soldiers actually took part in the expedition (see Table i, 15 [B] and [E], and compare with 15 [D]).

A final, fifth section, lists some of the preparations made for the expedition, both in respect of strategic dispositions regarding the north Syrian coast and the seas around Cyprus; as well as supplies and materials necessary for the expedition (who was to provide and transport them, and where to). In particular, reference is made to some of the imperial officials involved: the *stratēgos* of the Kibyrrhaiotai and the *katepanō* of the Mardaires of Attalia (657.1-7). The *archōn* of Cyprus, Leo Symbatikes, for example, is to send spies or scouts to the Gulf of Tarsos and to the *Stomia* (the coastal regions around the mouths of the rivers near Tarsos, especially the Pyramos [Cayhan] and Saros [Seyhan]); while other officials are to make sure that Arab naval activity will not pose a threat to the imperial fleet.³⁸

The better to illustrate the nature of the information given in the text, and to point up the relationship between the different sections, as well as the inconsistencies to which I have referred so far, the material is presented below in tabular form.

35. Made up of 34,200 oarsmen, 7,140 soldiers, 700 Rus' and 5087 Mardaites.

36. Of the 7,140 soldiers, 2,940 are listed as thematic, leaving 4,200 made up of tagmatic troops (1,037), Armenians from Sebasteia (1,000), Prine (400 or 500) and Platanion (500). Those from the Thrakesion district cannot have exceeded a maximum of 1,163 or 1,263 (if only 400 Armenians from Prine actually went).

37. See RUSKE, *De cer.*, ii, 776.

38. For Leo, see 657.7-12. This Leo may be related to (?the son of) the Symbatikios who was *stratēgos* of Laggobardia in 891-892; cf. FAKENHAUSEN, *Untersuchungen*, 76-77; VASILIEV, *Byzance et les Arabes*, ii, 1, 211 and n. 1. For *ta Stomia*, see *ibid.*, 205 n. 5. Vasiliev also suggests that *ta stomia* refers to the Syrian frontier regions and passes (inland), but in the context of a naval expedition, this seems unlikely.

Table i

[A] units	[B] participants (estimate) (651.18-652.8)	[C] participants (actual) (652.9-654.6)	[D] pay (actual) (654.7-656.6)	[E] <i>prochrecon</i> (estimate) (656.7-18)
[1] imperial fleet	12,000	(i) 18,000 ($60 \text{ dro-mones} \times 230 + 70$) = 13,800 + 4,200 + (ii) 5,800 ($20 \text{ pamphylot} \times 160 + 20 \times 130$) = Bonn 23,002 (actually: 23,800) ³⁹	12,502 officers and men: <i>roga</i> of 15 <i>kentenaria</i> , 6 <i>litrai</i> and 10 <i>nn.</i> (i.e. 12,000 + 502 officers) + 1,000: \varnothing <i>nn.</i> 5 - 69 <i>litrai</i> , 32 <i>nn.</i> (= 5,000 <i>nn.</i> , correct)	no <i>prochrecon</i>
[2] Rus' ⁴⁰	700	700 (pres. in the 20 <i>pamphylot</i> of 130 men, \varnothing 35 Rus')	<i>roga</i> of 1 <i>kent.</i>	no <i>prochrecon</i>
[3] sub-total (a)			total of <i>roga</i> for the fleet and the Rus' 17 <i>kentenaria</i> , 59 <i>litrai</i> and 42 <i>nn.</i>	
[4] Kibyrrhaiot <i>thema</i> ⁴¹	5,600 + 1,000	(i) 4,500 ($15 \text{ dro-mones} \times 230 + 70$) = 3,450 + 1,050 + (ii) 2,260 ($6 \text{ pamphylot} \times 160 + 10 \times 130$) {i.e. + 160!}	6,760 officers and men: <i>roga</i> of 2 <i>kentenaria</i> , 21 <i>litrai</i> , 42 <i>nn.</i> together with the <i>diplos</i> (i.e. incl. them)	1,000 men \varnothing 2 <i>nn.</i> = 27 <i>litrai</i> , 56 <i>nn.</i>

39. Resulting from a copyist's misreading; noted also by TRIMOCOLO, 'The Army', 102 (see above, and note 28).

40. The Rus' were involved in all three ventures, in relatively small numbers: 700 in 911 (they seem not to have sailed in their own ships, but rather to have been accommodated on the *pamphylot* of the imperial fleet); 415 in 935, in seven (of their own?) ships (50-60 men per ship; standard Norse longships of different classes carried anything from 20 - 30 pairs of oars; with a full crew and supernumeraries crews of 60 or above would be usual); and 584 with 45 servants, in nine of their own ships, in 949 (about the same number of men per ship as in 935). It is possible that these were actually ships provided by the imperial government; but in that case the question of what sort of ships remains unclear. Imperial *chelandia* needed a basic complement of just over 100 men; in both cases, therefore, these ships may have been smaller vessels, such as the lighter *galeas* of the Mardaites. In the 935 document, however, they are referred to as *Rös karabia* (660.18), which might suggest more than simply boats used by the Rus'. That they were especially built for the Rus', at least in 949, whether of Rus'/Viking or Byzantine design, seems clear from the list of material required for their fitting out: see 674.7-11 (and cf. 674.11 - 675.6). On the relationship between Rus' soldiers and Byzantium, and the trade agreements which account for their presence, with ships, among Byzantine forces at this time, see S. FRANKLIN, J. SHEPPARD, *The Emergence of Rus 750-1200*, London-New York 1996, 103-105, 112ff., 134f.; D. OBOLENSKY, *The Byzantine Commonwealth. Eastern Europe, 500-1453*, London 1971, 185ff.

41. Established probably before 732, although the issue is debated: see M. GRIGORIOU-IOANNIDOU, 'Το ναυτικό θέμα τῶν Κιβύρραιων. Συμβολή στο πρόβλημα τῆς ιδρυσεώς του', *Byzantina* 11, 1982, 201-221;

[A] units	[B] participants (?estimate) (651.18-652.8)	[C] participants (?actual) (652.9-654.6)	[D] pay (actual) (654.7-656.6)	[E] <i>prochreon</i> (?estimate) (656.7-18)
[5] <i>Thema</i> of Samos ⁴²	4,000 + 1,000	(i) 3,000 ($10 \text{ dro-mones} \times 230 + 70$) = 2,300 + 700 + (ii) 1,680 ($4 \text{ pamphylot} \times 160 + 8 \times 130$) [i.e. - 320]	4,680 officers and men + from the <i>diplois</i> (i.e. incl. them) 1,000; <i>roga</i> of 2 <i>kenténaria</i> , 1 <i>litrai</i> , 11 <i>nn.</i>	1,000 men @ 2 <i>nn.</i> = 27 <i>litrat</i> , 56 <i>nn.</i>
[6] <i>Thema</i> of Aigaiou Pelagos ⁴³	3,000 + 1,000	(i) 2,100 ($7 \text{ dro-mones} \times 230 + 70$) = 1,610 + 490 + (ii) 1,000 ($3 \text{ pamphylot} \times 160 + 4 \times 130$) [i.e. - 900]	3,100 officers and men + from the <i>diplois</i> (i.e. incl. them) 1,000; <i>roga</i> of 1 <i>kenténarion</i> , 54 <i>litrat</i> , 3 <i>nn.</i>	1,000 men @ 2 <i>nn.</i> = 27 <i>litrat</i> , 56 <i>nn.</i> (i.e. 3,000 men @ 2 <i>nn.</i> = 83 <i>litrat</i> , 24 <i>nn.</i>)
[7] <i>Thema</i> of Hellas ⁴⁴	no information	(i) 3,000 ($10 \text{ dro-mones} \times 230 + 70$) = 2,300 + 700	no information for Hellas	no information for Hellas
[8] Mardaites ⁴⁵	no information	5,087 (4,087 [army with officers] + 1,000)	4,087 officers and men; <i>roga</i> of 4 <i>kenténaria</i> , 66 <i>litrat</i> , 32 <i>nn.</i> The addition of 1,000 men @ 8 <i>nn.</i> = 1 <i>kenténarion</i> , 11 <i>litrat</i> , 8 <i>nn.</i> altogether for the Mardaites of the West = 5 <i>kenténaria</i> , 77 <i>litrat</i> , 42 <i>nn.</i> (incorrect; = 5 <i>kenténaria</i> , 77 <i>litrat</i> , 40 <i>nn.</i>)	1) 3 <i>toumarchai</i> @ 36 <i>nn.</i> (= 108); 2) 42 <i>dronggarior</i> @ 12 <i>nn.</i> (- 504); 3) 42 <i>konétes</i> @ 6 <i>nn.</i> (= 252); 4) 5000 soldiers @ 4 <i>nn.</i> (= 20,000); (total = 20,864 <i>nn.</i> = 2,8956) Bonn = 2 <i>kent.</i> , 99 <i>litrat</i> , 56 <i>nn.</i> (i.e. 10 <i>litrat</i> too many) (i.e. 5,000 soldiers + 3 + 42 + 42 = 87 officers = total of 5,087)

OIKONOMIDES, *Listes*, 351 with lit.; TIB 5/1, 45ff. Divided into smaller units during the ninth century: see AHRWILER, *Mer*, 108-109; NISBET, OIKONOMIDES, DOSeals II, 109ff., 150-151.

42 Originally a division of the theme of Aigaiou Pelagos; established as a theme by 899: OIKONOMIDES, *Listes*, 352; NISBET, OIKONOMIDES, DOSeals II, 130-131.

43 Established from the territory of the Kibyrthaior theme by 843: OIKONOMIDES, *Listes*, 353; NISBET, OIKONOMIDES, DOSeals II, 110-112.

44 Established probably between 687-695: OIKONOMIDES, *Listes*, 351; J. KODER, E. HILL, TIB 1, Vienna 1976, 56-60.

45 On the Mardaites, the question of their origins, and their distribution in the eastern and western parts of the empire, see the detailed survey and presentation of the literature in DILLEN, *Ethnische Verschiebungen*,

[A] units	[B] participants (?estimate) (651.18-652.8)	[C] participants (?actual) (652.9-654.6)	[D] pay (actual) (654.7-656.6)	[E] <i>procheon</i> (?estimate) (656.7-18)
[9] sub-total (b)	28.300	see below: 1,060 soldiers fewer than in col. [B] 4-6	total for the imperial fleet, the 'Rus', the thematic fleets and the Mardaites of the West: 29 <i>kentēaria</i> , 13 <i>litrāi</i> , 66 <i>nn.</i> (correct, validating emendation of total for Mardaites in (D) 8 above)	

138-158; see also KUHN, *Byzantinische Armee*, 160-163 and H. BARTIKIAN, 'Η λίστη των οινιγγατος τῶν Μαρδαιτῶν', in *Byzantion. Tribute to Andreas N. Stratos*, I, Athens 1986, 17-39 (but see the critique in DILLEN, *op. cit.*; TIB 5/1, 44-46, 101). The internal structure of this division as presented in the text at 656.10-12 has been dismissed by TREADGOLD, 'The Army', as a nonsense, invented by the copyist to fill a gap in his source documents. But this need be the case only if one accepts Treadgold's assumptions about the nature of tactical administrative structures in the army as a whole, and will be discussed below (section 9. v). Whether the Mardaites of the western *themata* were ethnically the same as those of Asia Minor and the Ammanos region from which they originally emigrated is open to doubt; see DILLEN, *Ethnische Verschiebungen*, 155ff. At any rate, they seem to have been established as independent divisions by the early tenth century in the regions of Peloponnese, Nikopolis and Kephallenia. The 3 *toumarchai* listed at *De cer.*, 656.10-11 may be the commanders of these three contingents, which may suggest in turn that (a) each group constituted one *tourma* of the regions in question, and (b) that each such division may have numbered about 1,200 men. It has been suggested that the term Mardaitai may refer simply to their function as sailors and maritime scouts and soldiers. All that can be said of their organisation is that from the references to them in the 911 documents they had a structure and the officers familiar from the standard thematic establishment (*toumarchai*, *drouggarior*, *kometes* and *stratiotai*), and with a pay scale for their *procheon* very similar to that of the Armenians of Sebasteia. They clearly constituted a similarly distinctive group whose prowess in military terms was appreciated by the authorities; but there is no evidence, apart from the name, that they had any special association with ships and the sea. In contrast, the 'original' Mardaites (of the East), clearly were connected with naval activities, formed part of the division of the Kibyrrhaiot *thema*, and were under the authority of the *katepano* of Attalaea. The latter was appointed traditionally by the emperor directly, and was not subordinate to the *stratēgoi* of the Kibyrrhaiot *thema*, with whom conflicts clearly arose at times; see *De adm. imp.*, §50.169-256, and comm., 192f. In the 911 document the Mardaitai of the West are referred to simply as soldiers, and in 949 they are simply the 'Mardaites of the western *thema*'; in both campaigns the Mardaites of Attalia have clearly defined naval duties, and are described as the 'army/host of the *galeai*' (656.12; 657.1-7; 660.8-12; 662.16-17; 665.19-21). From the reference to *galeai* from Karpathos, Antioch (ad Cragum) and Attalia in the document for 949 (665.14-18) it may be deduced that these were the bases from which three separate flotillas operated. Treadgold's hypothesis that the 12,000 Mardaites resettled by Justinian II (possibly: Tiberius Apsimai is also possible; see DILLEN, *Ethnische Verschiebungen*, 145ff.) in Armenia and then Pamphylia became the thematic forces of the original Kibyrrhaiot *thema*, and hence of its later subdivisions, of Samos, the Aegean, and the Kibyrrhaiots, is based solely on the fact that the sum of the oarsmen of these three regions in 911 amounts to some 12,300: these are, thus, seen as the 'descendants of Theophanes' 12,000 Mardaites' ('The Army', 115f.). But apart from the objection that all the soldiers/sailors of these *thema* would thus have to be identified as Mardaites, the coincidence of two numbers, one based on much earlier reports and describing a situation over two hundred years earlier, is a rather slender foundation for such a theory. See also MAKYPOULAS, 'The Navy', 161.

[A] units	[B] participants (?estimate) (651.18-652.8)	[C] participants (?actual) (652.9-654.6)	[D] pay (actual) (654.7-656.6)	[E] <i>prochreon</i> (?estimate) (656.7-18)
[10] <i>Kaballarika</i>		included in figs for imperial fleet (12,000 + 6,000) (see [C] 1 above); actual nos: 13,800 + 4,037 = 17,837		
[11] <i>scholariori</i> (Thrakesion and Macedonian) ⁴⁶	1,037	ditto	1,037 men, <i>roga</i> of 1 <i>kent.</i> , 41 <i>litrai</i> , 24 <i>nn</i>	no <i>prochreon</i>
[12] <i>Thema</i> of <i>Thrakesion</i> ⁴⁷	1,000	ditto	3,000 men @ 2, <i>roga</i> of 1 <i>kent.</i> , 80 <i>litrai</i> , 24 <i>nn</i> . (<i>incorrect</i>) 3000 x 2 - 72 = 83 <i>litrai</i> , 24 <i>nn</i>) i.e. 97 <i>l</i> . too much (copyist's error)	no <i>prochreon</i>
[13] Armenians of <i>Sebasteia</i> ⁴⁸	1,000	ditto	for the <i>thema</i> of <i>Sebasteia</i> for 1,000 men, <i>roga</i> of 1 <i>kent.</i> , 13 <i>litrai</i> , 24 <i>nn</i> .	1) 5 <i>tourmarchai</i> @ 12 <i>nn</i> . (= 60) 2) 10 <i>drouggaroi</i> @ 6 <i>nn</i> . (= 60) 3) 8 <i>kometes</i> @ 5 <i>nn</i> . (= 40) 4) 965 soldiers @ 4 <i>nn</i> . (= 3,860) (i.e. 988 not 1,000 as in cols. [B] and [D]) (total = 4,020 <i>nn</i> . = 55:60) Bonn: 55:7; Ms 55:60

46. The term *scholariori* referred to soldiers of all four imperial *tagmata*, not just the *Scholar*; see KÜHN, *Byzantinische Armeen*, 73f.

47. Established at the same time as the original themes of Opsikion, Anatolikon and Armeniakon, probably in the early 640s; R.-J. LINN, '«Thrakien» und «Thrakesion»', *JOB* 26, 1977, 7-47, see 22ff.

48. This is the first reference to the region as a *thema*; see OIKONOMIDES, *Listes*, 349. Armenians had always been well represented in the upper echelons of the Byzantine establishment, especially in military positions; they become increasingly significant as an element of the regular troops during the ninth and tenth centuries; see in general DILLIN, *Ethische Verschiebungen*, 72-82; and E. HILD, M. RISKE, *TIB* 2, Vienna 1981, 84, 274-276.

[A] units	[B] participants (?estimate) (651.18-652.8)	[C] participants (?actual) (652.9-654.6)	[D] pay (actual) (654.7-656.6)	[E] <i>prochreion</i> (?estimate) (656.7-18)
[14] Armenians of Platanion ⁴⁹	500	ditto	500 men @ 6 nn., <i>roga</i> of 1 <i>kentēnario</i> , 41 <i>litrāi</i> , 48 nn. (incorrect: 500 x 6 = 3000 - 72 = 41 <i>litrāi</i> , 48 nn.) (i.e. 1 <i>kent.</i> too much (copyist error))	no <i>prochreion</i>
[15] Armenians of Priene ⁵⁰	500	ditto	400 men @ 5 nn., <i>roga</i> of 1 <i>kentēnario</i> , 27 <i>litrāi</i> , 56 nn. (incorrect: 400 x 5 = 2000 + 72 - 27 <i>litrāi</i> , 56 nn.) (i.e. 1 <i>kent.</i> too much) (copyist error)	500 men @ 2 nn. = 13 <i>litrāi</i> , 64 nn. (correct) (NB: 500 men at [B] 15, [E] 15; but only 400 men at [D] 15)
[16] sub-total (c)	Bonn - 6,037 (actual total - 4,037: see extra 2,000 Thrakesion troops at 655.15)	112 (<i>dromónes</i>) (incorrect: {60 + 15 + 10 + 7 + 10} - 102) + 75 <i>pamphyloī</i> (cor- rect: 40 + 16 + 12 + 7) = 34,000 oarsmen (incorrect: 13,800 + 5,800 + 3,450 + 2,260 + 2,300 + 1,680 + 1,610 + 1,000 + 2,300 = 34,200): + 7,340 soldiers (incorrect: 4,200 + 1,050 + 700 + 490 + 700 = 7,140) + 700 Rus' + 5,087 Mardaitai	total for 2,037 <i>kaballarioi</i> = <i>roga</i> of 2 <i>kentēnaria</i> , 54 <i>litrāi</i> , 38 nn. (incor- rect: 1:41:24 + 1:13:24 = 2:54: 48 not 2:54: 38) total for the addi- tional 3,900 men = <i>roga</i> of 1 <i>kent.</i> , 52 <i>litrāi</i> , 56 nn. (this is the <i>correct</i> total from the <i>corrected</i> figures) total for all the <i>kaballarikon</i> = <i>roga</i> of 4 <i>kentēnaria</i> , 7 <i>litrāi</i> , 32 nn.	

49. Recruited as a *ragma*, i.e. on a short-term, mercenary basis, supported from central funds and redirected provincial taxes in kind rather than thematic *strateiai*. For the location, BRYER, WINFIELD, *Pontos*, I. 160-164: ancient Polathanē, mod. Akçaabat, it is situated on the coast a short distance to the west of Trebizond.

50. See P. CHARANIS, 'On the Ethnic Composition of Byzantine Asia Minor in the Thirteenth Century', in *Προσφορα τις Στιλπωνι Η. Κυριακαδην*, Thessaloniki 1953, 140-147 (repr. in ID., *Studies on the Demography of the Byzantine Empire*, London 1972, VIII), and H. AHRWITTER, 'L'Asie Mineure et les invasions arabes (VII-VIII^e siècles)', *RH* 227, 1962, 1-32, see 18-19 (repr. in EAO, *Études sur les structures administratives et sociales de Byzance*, London 1971, IX). Possibly Priene in the Thrakesion region: see KOULABA-DIBBORA, 'O

[A] units	[B] participants (?estimate) (651.18-652.8)	[C] participants (?actual) (652.9-654.6)	[D] pay (actual) (654.7-656.6)	[E] <i>prochreion</i> (?estimate) (656.7-18)
[17] total	Bonn - 34,037 (actual total = 34,337; 300 missed from sub-total (b) above)	Bonn - 45,629 (actual total = 47,127) [? omits 2,000 extra Thrakesian cavalry; 1,060 the- matic marines; includes 163 extra <i>scholariori</i> [i.e. 4,200 not 4,037]	total of all <i>roga</i> : 32 <i>kent.</i> , 37 <i>litrai</i> , 36 <i>nn.</i>	total of <i>prochreion</i> : Bonn = 4 <i>kentenar- ia</i> , 52 <i>litrai</i> , 60 <i>nn.</i> (incorrect: actual figs as recalculated = 4:42:60. Difference accounted for by extra 10 <i>litrai</i> added in [E] 8 above.)

These four bundles of information derive from different stages in the organisational process: section 1 seems to reflect the initial estimate: it is presented in round figures, based probably on sets of returns held in the bureau of the *stratiōtikon*, setting out the manpower technically available from each *thema*. It was presumably drawn up at the same time as, or shortly after, the mission of the *protōspatharios* Theodore Pagkrates to raise 500 selected cavalry soldiers from among the Platinatai (or Plataniatai) in the Anatolikon region (657.20-658.4), listed at 652.6 and 655.18. Section 2 and section 3 present sets of figures which are more-or-less in agreement; and represent the number of soldiers, oarsmen and vessels which would be involved, in the first case, and the amount of their *roga*, in the second case.

The sums regularly do not add up, and in some cases by a considerable margin: thus in the entries for the soldiers of the Thrakesion, and the Armenians of Platanion and Prine, the sum given appears to be in each case a whole or almost a whole *kentenarion* too much. Bonn's Latin translation assumes that the word (or sign for) *kentenarion* unaccompanied by a number must mean just 1 *kentenarion*. Treadgold assumed an error of transmission or transcription in the production of I. He proposed on this basis simply to emend the text from *roga ρλλ πχδ* to *roga λλ πχδ*, and this makes sense in respect of the total for the units in question, for the salary for the 3,900 'additional' troops (3,000 from Thrakesion, 500 Plataniatai and 400 from Prine) is made up of 83:24 + 41:48 + 27:56 = 1:52:56 (see 656.4-5). But this begs the question of whether this really is to do simply with the accidental addition of the word *kentenarion* or its abbreviation, since the odd overestimate of 97 *litrai* seems to conceal a more complex state of affairs. Indeed, in the case of the Armenian units, the sum given is correct except for the extra *kentenarion*, whereas in the case of the Thrakesion troops the figure given for 3,000 soldiers @ 2 *nn.* each amounts to 83 *litrai* 24 *nomismata*, and the sum given in the text is 1 *kentenarion*, 80 *litrai*, 24 *nn.*, i.e. an overestimate of 97 *litrai*.⁵¹

γρωγραφικός, κοσμος, 509-510; ODB 1717. Alternatively, and perhaps more likely, given the bracketing together of Armenian troops from Platanion and from Sebasteia, an identity with the Girapriño of the later Portulans, in the Pontic region of Giresun (Kerasous) has been proposed: see BRUNN, WINFIELD, *Pontos*, I, 127.

51. TREADGOLD, 'The Army', 103.

In addition, however, it should be noted that in other cases where only 1 *kentēnarion* is meant, the figure is actually given (e.g., 655.2; 6; 14; 17; etc. Note that the last two cases occur between the three entries where no figure is given, the entries for the Thrakesion troops and the Armenians of Platanion and Prine). It seems to me more probable that the copyist, working from data which he had been given, was faced with an information format which he did not understand or was not familiar with. Assuming he was working with clerical documents drawn from an original salary and payments schedule, which seems likely and is generally admitted, the statistics in their raw form will have appeared listed in columnar form (as we know they were, for example, in Egyptian papyrus account-books up to the seventh century and beyond, under the Arabs), with headings for the different quantities to be filled in as appropriate (*kentēnaria*, also abbreviated as ρ, *litrai*, abbreviated as λλ, and *nomismata*, usually stated simply as a figure [after the sign:] or with the sign „ after the amount of *litrai*; and *miliarēsia*, usually abbreviated as ∠). This would then be copied out by the scribe who was given the extracts from, or the complete set of, documents (it is impossible to say which) in the form: name of units, rate per soldier, amount. Each entry would have its column for *kentēnaria*, *litrai* and *nomismata*. The absence of a figure for the number of *kentēnaria* simply means, therefore, that the copyist found no entry in this column for the units in question, but that he copied down the category *kentēnaria* because that was what his source had. We should read the absence of any figure for the number of *kentēnaria*, therefore, not as a mistaken addition by the scribe of 1 *kentēnarion*, but rather as 0 *kentēnaria*, which means that the text of the manuscript as it stands needs no substantial emendation.

To complicate matters, two separate figures for the cavalry forces are given, at 656.3-4: for the total of *kaballarioi*, 2,037 men (1,037 *scholarioi*, 1,000 from Sebasteia), salary of 2 *kentēnaria*, 54 *litrai*, 38 *nn.*; and at 656.4-5, as already mentioned, where the extra 3,900 men are listed with a combined salary of 1 *kentēnarion*, 52 *litrai*, 56 *nn.* The sum of these is correctly given as 4:7:22 at 656.6. The Armenians of Sebasteia clearly did receive the stated sum of 1:13:24, which together with the 1:41:24 of the *scholarioi* amounts to 2:54:48, thus yielding a discrepancy of 10 *nn.* in the first total given. The extra *kentēnarion* noted for the Armenians of Prine and Platanion, and that for the Thrakesion troops, is not represented in the total, however, and can therefore reasonably be ascribed to copyist's confusion or omission.

A major contradiction between these sections concerns the information given in respect of the imperial fleet. In the opening statement the strength of the imperial fleet is stated to be 12,000 (651.18). In the list of ships from the imperial fleet, the total of crews (excluding the 70 soldiers for each *dromōn*) works out at 13,800 for the *dromōnes* and a further 5,800 for the 40 *pamphylooi* (652.10-14). Together with the 700 Rus' and the 70 soldiers listed for the 60 *dromōnes* (a further 4,200 men) also listed at the same point, the total is 23,800 (although the total given in the text — 23,002 — is not the sum of the figure given). The explanation is probably that the Rus', like the cavalry soldiers carried on the *dromōnes*, were carried on the *pamphylooi*, but were not included in the aggregate, which is, however, still some 100 men too few. That the cavalry soldiers themselves were carried on the warships, implicit in the figures given in the document (see [1] C, [4] C - [7] C, below), is made explicit in the heading 'for the cavalry forces which ought to travel with the fleet' (652.3). It is also stated explicitly in

a note included in the material in *Document 4* below, for the expedition of 949: 'the *dromôn* should have 300 men, 230 fleet oarsmen and fighters, the other 70 men warriors from the *kaballarika themata* or the *ethnikoi*'. Finally, it is implicit in the figures given for the troops transported in the 935 expedition to Italy.⁵² In the section giving the total of thematic and imperial ships, the combined totals for *dromônes* on the one hand, and *pamphyloï* on the other, assume the presence of all 100 of the imperial fleet vessels (112 *dromônes* is an error for 102; 75 *pamphyloï* is correct: 654.3-5). In the section giving the *roga* of the fleet, however, the pay listed is for 12,502 officers and men, and for an additional 1,000 paid at a special rate, making in all 13,502.

It is difficult to reconcile these figures. From the opening statement, we may assume that 12,000 men from the imperial fleet were originally intended to be involved; and from the list of *rogai* it seems that 12,502 and an extra 1,000 were actually paid. But the list of vessels involved — and the fact that the sum of the separate figures and the repeated total suggests that all the vessels listed were indeed involved — would need far more men than this. There are two possible explanations. The first would argue that far fewer ships than are listed were actually sent, thus taking the total number of vessels in the fleet to be 100, of which only part, that manned by the 13,502 sailors/soldiers, sailed on the expedition.⁵³ The difficulty here is that the various groups of tagmatic and other soldiers, amounting to just over 4,000 men if we take the maximum figure⁵⁴ were transported by the *dromônes* of the imperial fleet; even including the *pamphyloï*, the 52 ships thus involved would have to take, in addition to their sailing and fighting complement, an average extra load of anything from 75 and more men, depending on how many we assume actually went. But this presents certain technical problems. To begin with, the carrying capacity of the warships was restricted by the quantity of supplies that might have been taken on board, especially if drinking water needed to be taken, even for short stretches.⁵⁵ In the second place, the complements given in the text are, with the possible exception of the *pamphyloï* with 130 men each, the probable maxima for the vessels in question. The Byzantine *dromôn*, for example, with its crew of oarsmen/soldiers and extra soldiers, totalling 300, together with the extra equipment they needed to carry, and their water supply, would be already at full capacity;⁵⁶ given the low freeboard and tendency easily to swamp in anything but the gentlest of seas, extra cargo would be extremely hazardous.⁵⁷ Carrying an extra 70 or more men would be, if not entirely impossible, extremely dangerous; more than this would have been out of the question. In view of this, and the fact that the soldiers in question clearly did go on the expedition and on board the warships of the imperial fleet, we are left with the conclusion that all 100 ships of the imperial fleet were involved.

52. 670.3-6; and cf. 660.13-661.6, a point already noted by MAKYPOULAS, 'The Navy', 166.

53. This is the interpretation preferred by TRIMBOLD, 'The Army', 111. He calculates that 12,500 men would have crewed 32 *dromônes* with 300 men each, 10 *pamphyloï* with 160 men each and 10 *pamphyloï* with 130 men each. This would be plausible, if it were not for the fact that his assumptions that each type of vessel had fixed crews of 300, 160 and 130, and that the 12,500 included also a body of 4,000 marines, is incorrect.

54. Although in fact only 3,937/4,037 may have gone, as we have noted that 2,000 of the 3,000 cavalry soldiers from the Thrakesion district were not included in the final total of participants.

55. See the discussion in PRYOR, *Geography, Technology and War*, 75ff.; and below.

56. CHRISTIDES, *Conquest of Crete*, 44f.

57. PRYOR, *Geography, Technology and War*, 65f., 69-71.

An alternative to the suggestion that only a portion of the 100 imperial vessels were employed is, quite simply, that the *roga* for the 40 *pamphylooi* has been omitted from this set of documents — either because the redactor did not have it in the dossier at his disposal, or because it was accidentally passed over. One might also hypothesise that this element of the fleet had already been paid in advance and that its payments were not registered with the Cretan documents. Either way, the figures for the *roga* of the fleet — for 12,502 men, with an extra draft of 1,000 crewmen in addition (654.8-9) — match more-or-less those for the crews of the 60 *dromônes* without their complements of 70 soldiers each: $60 \times 230 = 13,800$. These 60 vessels with their full complements total 18,000 according to the text (652.10-11) which, if we take the figure from the list of *roga* for the fleet, was made up of 13,502 sailors/soldiers and (presumably) 4,498 soldiers. The numbers of soldiers who went with the fleet can be calculated at 4,037. We can choose to assume either that the total given at C[1] is correct, and thus that there were 13,800 crewmen and 4,200 cavalry soldiers on board; or that the smaller figure is more accurate, and assume that there were 13,502 crewmen and 4,037 soldiers, totalling 17,539, some 461 fewer (leaving 7 or 8 free places out of 300 on each *dromôn*).

These suggestions are no less hypothetical than those already discussed. But given the fact that the cavalry soldiers were transported by the *dromônes* of the imperial fleet; that the total of ships which actually went does seem to have included all 60 of the imperial *dromônes* as well as the 40 *pamphylooi*; that the 60 *dromônes* were assumed to be carrying a total of 18,000 persons; that the pay allotted to the imperial fleet would account for only 13,502 of these; and that the cavalry soldiers listed as travelling with the fleet would make up the rest, short of 461, it seems at least as probable, if not more so.

This is an explanation that also has the important advantage of not assuming that the figures which were transmitted to the redactor, in whatever form he received them, were in a readily comprehensible or even internally consistent format. It has the advantage of not assuming that the numbers of soldiers and sailors and of accompanying officers were exactly even or regular, and takes account of the probable discrepancies between the planning and assumptions made in different bureaux about the costs, numbers and participation of the units in question. While some of the differences between the various figures are certainly a result of scribal error, others are much more difficult to rationalise away, and I do not think that attempting to make a perfect match between all three sets, by arbitrarily intervening in the text on the basis of even more generalised assumptions about the organisational structure of the imperial fleet, is justified. Better to assume a certain original inconsistency or inaccuracy in the records; especially in view of the fact that these can clearly not have been the full set of documents originally produced in response to the planning, execution and results of the expedition. The documentation which we may legitimately assume was never part of the original dossier used to create the *Lipsiensis* may well have had a range of perfectly obvious explanations for the anomalies we see in the extant material. I do not believe we can legitimately alter the text to fit with our preconceptions, however logical they may appear to us.⁵⁸

58. Thus I must reject the long string of hypotheses produced in this respect by TREADGOLD, 'The Army', 110ff.

The documents do give detailed information on the salary rates of different units and, more especially, within such units. Although the information is not given for all the units involved, it does provide insights into numbers, payment and the relationship between soldiers and officers. No mention is made of horse-transports, but these must also have been present: in the documents dealing with the expedition of 949, reference is made to the shortage of transport vessels, for example, which are otherwise not mentioned at all. The reason may be that the redactor of the material did not have before him any documents from the department of the *logothetēs tōn agelōn* and that of the *dromos*, which would normally have been responsible for these matters.⁵⁹ I will return to these issues in a more detailed discussion after the remaining documents have been presented.

The remaining section of *document 1* consists of two groups of miscellaneous materials. Since these are closely associated with issues of supplies, logistics and communications, I will deal with these in section 5 below. But it is worth noting at this point that the list of provisions and materials to be provided by the thematic administration at 656.18-660.12 clearly reflects an early stage in the planning of the expedition: among the materials required, for example, are a range of different sorts of nail for the construction of ships as well as the gangplanks and frames or mangers connected with the transport of the horses (see esp. 658.17-659.7).

Document 2

This provides details of the expeditions to Italy in 934 and 935. It consists essentially of a brief list of the ships and men sent under the *prōtospatharios* Epiphanios in the eighth year of the indiction. Eleven *chelandia* from the imperial fleet were involved, which together with the eleven *chelandia* sent in the previous year under the *patrikios* Kosmas, and seven Rus' ships, made a total of 29 vessels altogether. The Rus' ships had a total complement of 415, approximately 60 men per vessel. Cavalry troops were transported by the remaining ships: the list includes 908 *scholarioi* (the majority newly-recruited), and smaller units of foreign soldiers serving in the various palatine guards divisions:⁶⁰ from the great and middle *hetaireia*, from the Pharganoi, Chazars,⁶¹

59. 663.13-14 for the lack of transports in 949; for the departments responsible for transport-animals and cavalry-mounts, see HALDON, *Three Treatises*, comm. at 161f. In the 760s, Theophanes reports that the transport-*chelandia* of Constantine V carried 12 horses each (T1HOPHL., 432f.). But it is not clear that this was all they could carry, or whether they also carried soldiers as well; nor whether, if the former case applied, there was a particular reason for not employing larger vessels (which were certainly available, since there is no reason to think that the construction of ships such as the *dromōn* had ceased). Like their Roman predecessors, these could have carried many more than 12 animals each (converted triremes could accommodate as many as thirty horses). For some discussion, see PRYOR, 'Transportation', who has been followed by others: see esp. A. HYLAND, *The Medieval Warhorse: from Byzantium to the Crusades*, Stroud' 1996, 143ff. The subject clearly requires further examination, and a detailed scrutiny of the Byzantine sources for information in this respect is certainly a desideratum.

60. Described as δια τῶν χαροπαιῶν τῶν ἀνικῶν, that is to say, from the soldiers belonging to the 'camp' (*charax*), active troops, as opposed to those with titular membership only: see HALDON, *Byzantine Praetorians*, 605 n. 1014; ID., 'Recruitment and Conscription', 59 n. 103; *De cer.*, 697.18-698.22.

61. See OIKONOMIDES, *Listes*, 327f.; AHRWILER, 'Recherches', 27; P. KARIN-HWILER, 'L'Hétériarque: l'évolution de son rôle du *De ceremoniis* au *Traité des Offices*', *JÖB* 23, 1974, 101-143. On Epiphanios, Kosmas,

the *basilikoi*,⁶² the *tagma* of the *Arithmos* based at Constantinople, from newly-recruited prisoners, including those from Mosul, Palermo ('Panormirai'), Turks (probably Magyars)⁶³ and Armenians; the total of these subsidiary groups comes to 503, and the overall total of cavalry (i.e. not including the Rus') made up by these groups is 1,411, although the text states that there were 1,453 cavalry troops present. Whether the redactor has missed a group or more from his list, or whether the figures were corrupted in copying is unclear. The Italian expedition thus involved 22 *chelandia* of the imperial fleet accompanied by 7 Rus' vessels, a contingent of some 1,868 soldiers in all. As with the Cretan expedition of 911, horse-transports are not referred to. We may assume, for the same reasons, that they were present; or that — given the relatively small numbers involved — they were not taken (or perhaps supplied by the Byzantine forces already in Italy). At a possible rate of 12 horses per *chelandion* the 22 boats of the expedition of 934-935 could not possibly have catered for the horses of the over 1400 cavalry troopers.⁶⁴

Document 3

This short account provides supplementary information on the gifts and payments which this expedition took with it to persuade Hugh to ally himself with the imperial policy against the Lombard rebel princes, and the conditions under which they were to be returned to Constantinople. The list includes cash, various expensive garments and other items (such as an onyx drinking vessel);⁶⁵ and instructions on how to dispense the gifts should the king not come in person on the campaign. Epiphanios, who was in command of the expedition both militarily and diplomatically, was also given a variety of high-quality, costly items of clothing with which to purchase support, some of which he did indeed 'spend', bringing the remainder back on his return.⁶⁶ Unlike the reports on the preparations and pay for the Cretan expedition of 911 (and, as we shall see, for 949 also), this report seems to have been updated upon the completion of the mission, and represents in consequence a retrospective account, although no doubt based on a number of other documents from the earlier stages of the expedition.

and these events, see FAERINHAUS, *Untersuchungen*, 78-79, 164; and B. KREUZ, *Before the Normans: southern Italy in the ninth and tenth centuries*, College Park PA, 1992, 94-102.

62. See OIKONOMIDES, *Listes*, 328.

63. For Palermo/Panormos, see ODB 1562; and for the common use of the term Turks to describe the Magyars at this time, *ibid.*, 956f., 2100.

64. PRYOR, 'Transportation', 11, assumes that not all the horses, and possibly none at all, were carried. This seems very likely for this expedition, especially if the term *ta kaballarika* refers as much to the social status of the thematic soldiers in question (referring not simply to the fact that they fought as mounted soldiers, but that they possessed a horse, the key feature differentiating them from the other soldiers on the thematic registers), since they might thus have been intended to fight on foot (or to have been supplied with horses by their allies in Italy). But the provision of large amounts of barley for the expedition of 911 shows that even though the horses were not referred to, they must have accompanied the expedition, and been transported on horse-transports of some sort. I am grateful to John Pryor for discussion in this matter.

65. For the technical terms for items of clothing, see the detailed commentary to *Three Treatises*, esp. text C.

66. The importance of silk and silken garments as a medium of exchange as well as a form of gift has been discussed in depth by N. OIKONOMIDES, 'Silk Trade and Production in Byzantium from the Sixth to the Ninth century: the Seals of Kommerkiatioi', *DOP* 40, 1986, 33-53.

Documents 4a and 4b

This collection of materials brings us back to the imperial concern with the island of Crete. As we have seen, the expedition of 949 was, like that of Hinierios in 911, a failure, and a costly one. The information set out in *document 4* represents, like the material incorporated into *document 1*, partial accounts of troops numbers and units, pay, vessels and their capacities, and a much longer list of items of equipment, which seems in fact to belong to a rather different genre, but which was incorporated into this document because it had been collected and filed with the information about which department of the palace should supply what items to which vessels of the imperial fleet. Although informative, *document 4* actually tells us less about organisation and the process of costing and setting up such a military undertaking than *document 1*, although it does contain a much greater wealth of detailed technical information. In this respect, therefore, it can be seen that the two documents are by no means strictly comparable: both have several common elements, yet both present also very different types of information, and in different degrees of detail, about different aspects of the equipping of the expeditions, and about the records from which the information they have preserved was drawn.

As in the case of *document 1*, a tabular presentation of the material will establish these variations, and expose the information the text does contain, most clearly.

Table ii

[A] units	[B] Numbers (663.1-664.2; 664.7- 667.11)	[C] Pay (667.14-668.11)	[D] Prochreion or <i>philotimias</i> (228.11-669.5)	[E] Rates of pay (662.11-663.1; 669.5-12)
[1] [i] Imperial fleet = 150 units, ⁶⁸ incl. 6 <i>pamphylois</i> & 2 newly-built [ii] 100 <i>ousaka chel-</i> <i>landia</i> ; of which 100 units, ⁶⁹ 7 units	For Crete: 7 <i>pamphylois</i> , 33 <i>ousaka chelanda</i> , = 40 <i>chelanda</i> + 20 <i>dromones</i> @ 2 <i>ousai</i> = 40 <i>ousai</i>	for the 4 <i>themata</i> ⁷⁰ of the imp. fleet, offi- cers, men, imp. <i>man- datores</i> , doctors, pri- soners, officers + sol- diers, Toulmatzoi, Rus' + churches, <i>magganarioi</i>	no entry	

67. The imperial fleet seems to have been divided into four squadrons or divisions, referred to here as *themata*; see JENKINS, *De adm. imp. comm.*, 196. Jenkins calculated a total figure for the imperial fleet in both 911 and 949, and on the basis of taking 108 warships as the basic establishment of the fleet, at 12,000. As we will see in section 10 below, its total manpower must have been greater than this.

68. JENKINS, *comm.* to *De adm. imp.* §51.13-14, prefers to read a total of 108 rather than 150, since the cursive N (= 50) and H (= 8) are virtually indistinguishable in the manuscript. As will be shown in section 10 below ('The imperial and thematic fleets'), the original reading of 150 should be retained.

69. Note that at 664.9 the words... ἐξ αὐτῶν τῶν 'Pouσιων...' should read... ἐξ αὐτῶν τῶν ρούσιων..., referring not to Rus' ships (which anyway are always referred to as 'Pōc: exceptionally, at 673.15, they are *Roussikoi*), but rather to the immediately aforementioned 100 *ousaka chelanda*. It is possible that the copyist or an earlier scribe wrote 'Pouσιων' because imperial warships may have been red: see JENKINS, *De adm. imp. comm.*, 195, on the basis of THIOPH., 446.29.

[A] units	[B] Numbers (663.1-664.2; 664.7- 667.11)	[C] Pay (667.14, 668.11)	[D] <i>Prochreion</i> or <i>philotimiai</i> (228.11-669.5)	[E] Rates of pay (662.11-663.1 ; 669.5-12)
in Dyrrachion and Dalmatia: ^a 3 in Kalabria; 3 on Spanish service; 1 <i>pamphylos</i> and 24 units to guard CP.	[total for fleet = 7+3+3+1+24+7+33 + (2x20) 40 = 118 (i.e. 32 of 150 unaccounted for); see section 10 below]	cash pay 1,691 <i>l.</i> , 53 <i>nn.</i> + in mil. 73 <i>l.</i> , 62 <i>nn.</i> , 4 <i>mil.</i> - 17 <i>kent.</i> , 65 <i>l.</i> , 42 <i>nn.</i> , 4 <i>mil.</i>		
[2] Rus'	584 men + 45 servants - 629	no entry	no entry	
[3] Toulmatzoi ^b	368	793 for both lots	no entry	
[4] prisoners ^c	700	ditto	no entry	
[5] Aigaiion Pelagos (i) (left to guard CP). (ii) to cut wood of 8th ind.	6 <i>chelandia pamphylla</i> @ 120 + 4 <i>chelandia oustaka</i> @ 108 1 <i>oustaka</i>	69 <i>litrai</i> , 24 <i>nn.</i>	no entry	the thematic fleets were paid thus on arrival in Crete: turmarchs @ 30 <i>nn.</i> <i>k. tēs k.</i> @ 20 <i>nn.</i> <i>chari. tou them.</i> 20 <i>nn.</i> <i>dom. tou them.</i> 20 <i>nn.</i> <i>drouggarioi</i> @ 20 <i>nn.</i> <i>komētes</i> @ 6 <i>nn.</i> soldiers @ 3 <i>nn.</i>
[6] Samos (i) (left to guard CP):	6 <i>chelandia pamphylla</i> @ 150 + 6 <i>chelandia oustaka</i> @ 108 3 <i>chelandia</i> + 4 <i>dromones</i> @ 220 sent to Africa	134 <i>litrai</i> , 20 <i>nn.</i>	no entry	turmarchs @ 30 <i>nn.</i> <i>k. tēs k.</i> @ 20 <i>nn.</i> <i>chari. tou them.</i> 20 <i>nn.</i> <i>dom. tou them.</i> 20 <i>nn.</i> <i>drouggarioi</i> @ 20 <i>nn.</i> <i>komētes</i> @ 6 <i>nn.</i> soldiers @ 3 <i>nn.</i>

70. Dyrrachion appears as a *thema* in the 840s, but may have been established in the 820s: see NISBELL, OIKONOMIDES, *DOSeals* I, 40-41; KOUTABA-DIMITROU, 'Ο γεωγραφικός κώδικος', II, 326-328. Dalmatia had a *strategos* by 878, and may have been under an *archón* before this: OIKONOMIDES, *Listes*, 353.

71. The *Toulmatzoi* were identified with Dalmatia, from the Illyrian coastal region, by G. SCHUMBERGER, *Un empereur byzantin au V^e siècle: Nicéphore Phocas*, Paris 1890/1923, 50, followed by e.g. AHRWILIER, 'Recherches', 33 n. 11. They sailed on imperial ships rather than their own: cf. *De cer.*, 579.16 (*Toulmatzoi*) and 20-21 (*Talmatzoi*). They seem, like the 'Rus', to have formed a small but fairly permanent mercenary group at the imperial palace. Dalmatia was placed under the authority of an *archón* by the early 840s (*Takrikon Uspenkyj* 7.12) and may have been already under a *strategos* at this time, although the evidence is ambiguous. The only objection to this identity is the fact that Byzantine versions of the name of the region took the forms Dalmatia, Delmaria or Dermaria, and for its occupants Delmatinoi/Dalmatinoi: *De adm. imp.*, §30.51 and cf. NISBELL, OIKONOMIDES, *DOSeals* I, 46; and KOUTABA-DIMITROU, 'Ο γεωγραφικός κώδικος', II, 309-312. But the form of the name *Toulmatzoi* may reflect local dialect and self-appellation, and thus differ from the antiquarian term used of the region by the Byzantines themselves.

72. The drafting of prisoners into Byzantine service was a long-established tradition: in Justinian's time, for

[A] units	[B] Numbers (663.1-664.2; 664.7- 667.11)	[C] Pay (667.14.668.11)	[D] <i>Prochreion</i> or <i>philotomiai</i> (228.11-669.5)	[E] Rates of pay (662.11-663.1 ; 669.5-12)
[7] Kibyrrhaiot (i) (to guard CP): (ii) to guard the <i>thema</i> (iii) to cut wood of 8th ind. (iv) to guard Stephen on Rhodes (v) Attalia (vi) Antiochia (vii) Karpathos	6 <i>chelandia pamphylla</i> @ 150 + 6 <i>chelandia ousiaka</i> @ 110 2 <i>pamphylois</i> + 4 <i>ousiaka chelandia</i> 2 <i>ousiati</i> 1 <i>ousia</i> + 4 <i>dromones</i> @ 220 15 <i>galeas</i> , incl. 6 left to guard the <i>thema</i> 2 <i>galeas</i> to guard <i>thema</i> <i>galeas</i> ; 1 <i>gal.</i> to guard the island ⁷³	177 <i>litrar</i> , 4 <i>nn.</i>	no entry	turmarchs @ 30 <i>nn.</i> <i>k. tēs k.</i> @ 20 <i>nn.</i> <i>chart. tou them.</i> 20 <i>nn.</i> <i>dom. tou them.</i> 20 <i>nn.</i> <i>drouggarioi</i> @ 20 <i>nn.</i> <i>komētes</i> @ 6 <i>nn.</i> soldiers @ 3 <i>nn.</i>
[8] Peloponnese ⁷⁴	turmarch <i>tēs parathias</i> + 4 <i>chelandia</i>	no figure	no entry	no entry
[9] Mardaites of w. <i>themata</i> : Nikopolis, Peloponnese, Kephallenia ⁷⁵	3,000 men	@ 1 <i>n. p. month</i> for 4 mths = 166 <i>litrar</i> , 48 <i>nn.</i>	3,000 men @ 4 <i>nn.</i> = 166 <i>litrar</i> 48 <i>nn.</i> (i.e. 12,000 <i>nn.</i> - 72 = 1,66, 48)	no entry
[10] The <i>kaballarika</i> (i) <i>tagmata</i> in Thrace (ii) <i>tagmata</i> in Ma- ced.	<i>topotérētēs</i> , 139 off. + 354 men = 493 <i>topotérētēs</i> , 83 off. + 293 men = 376 = 869	no entry	<i>roga philotomias</i> in- stead of the <i>himatia</i> : (i) 171 <i>litrar</i> 29 <i>nn.</i> + 9 <i>skaramaggia</i> (ii) 130 <i>litrar</i> 62 <i>nn.</i> 20 <i>skaramaggia</i>	no entry

example, units of Ostrogoths, Persians and Vandals were recruited from prisoners, while numerous individual prisoners from various ethnic groups were recruited into Roman units or the *federati*: see JONES, *LRE*, 659 and n. 119.

73. For Stephen and the political context of this confinement, see REINHOLD, *Romanus*, 234.

74. Antioch on the Cragus: cf. *TIB* 5/1, 191-193.

75. No number is given for the contingent from Karpathos as a whole; but the sailors of the island played an important role as guides during the expedition under Nicephorus Phocas in 961: see AL'AMILOV, 224, 18-21; MAJAMU, *Les îles*, 545. Its strategic importance is also stressed by MAJAMU, *Les îles*, 85. For the difference between the *galea* and larger vessels, see the discussion in M.A. BRAGADIN, 'Le navi, loro strutture e altrezzature nell'alto medioevo', in *La navigazione mediterranea nell'alto medioevo. Settimane di studio del Centro italiano di studi sull'alto medioevo*, xxv, Spoleto 1978, 1, 389-407, at 398f.

76. Established definitely by 812, probably long before: see OIKONOMIDES, *Listes*, 350.

77. Established as a *thema* after 843 and by 899, probably ca. 880-890: cf. P. SOUSTAI, with J. KODER, *TIB* 3, Vienna 1981, 53-54; OIKONOMIDES, *Listes*, 351.

78. Established as a *thema* in the middle of the 8th century, probably: see *TIB* 3, 52-53; OIKONOMIDES, *Listes*, 352. For a brief historical survey of both Nikopolis and Kephallenia, see *TIB* 3, 54ff.

[A] units	[B] Numbers (663.1-664.2; 664.7- 667.11)	[C] Pay (667.14.668.11)	[D] <i>Prochreon</i> or <i>philotimiai</i> (228.11-669.5)	[E] Rates of pay (662.11-663.1 : 669.5-12)
[11] peric <i>tagmata</i> (iii) <i>Exkoubitores</i> (iv) <i>Hikanatoi</i>	<i>Exkoubitos + top. +</i> whole <i>tagma</i> = 700 <i>Hikanatos + top. +</i> whole <i>tagma</i> = 456	no entry	instead of 600 <i>himatai</i> : 4 <i>kent.</i> , 80 <i>h-trai</i> and 112 <i>skaramaggia</i>	no entry
[12] Armenians re- cently registered to be paid in <i>tagmata</i> of East ⁷⁹	1,000 men	no entry	no entry	no entry
[13] <i>Sthlabesianoi</i> settled in Opsikion ⁸⁰	220 men	127 men: 3 chiefs @ 5 <i>nn.</i> , 124 @ 3 <i>nn.</i> = 5 <i>litrat.</i> , 27 <i>nn.</i>	no entry	3 chiefs @ 5 <i>nn.</i> rest @ 3 <i>nn.</i>
[14] Thrakesion <i>thema</i>	<i>Stratègos</i> , 3 turmarchs + rest of thematic officers, staff, reti- nue, soldiers serving <i>dr.</i> + <i>komètēs</i> 150 (see [14] E for breakdown) (800 other soldiers having been deman- ded @ 4 <i>nn.</i> = 44 <i>h- trai</i> 32 <i>nn.</i> <i>Charpezikion</i> paid 24 <i>litrat.</i> , 56 <i>nn.</i>) 600 Armenians guarding coast of theme	this <i>thema</i> went to Crete <i>arogeouton</i> and therefore not entered here i.e. only <i>strat.</i> and officers plus support + 150 altogether: cf. [14] D & E. The 800 in [14] B must not have been need- ed, and the cash provided for them used for the Char- pezikion <i>thema</i> . This would leave 19.48 to Thrak. (or 16.48 following text)	no entry ***** <i>bandon</i> of <i>tourma</i> of <i>Theodosiakoi</i> : (1 <i>ko- mètēs</i> , 4 <i>proagetai</i> , 1 <i>dom.</i> of turmarch, 1 <i>a'mand.</i>) = 7 <i>bandon</i> of merarch: 7	<i>stratègos</i> , turmarchs of <i>Viktorei</i> , <i>Theodo- dos.</i> , coast. merarch. <i>chart.</i> , <i>k. tès k.</i> , <i>don.</i> 64 <i>drouggaro- komètēs</i> (some with 2 some with 3 sol- diers = 150 [22@3 = 66 + 42@2 = 84 = 150]); <i>proeleusts</i> of <i>strat.</i> : <i>a'mand.</i> , <i>a'kagk.</i> , <i>a'band.</i> , <i>a'dom.</i> (-6); 6 <i>a'kent.</i> , 100 <i>pezor</i> , 600 Armenians guarding coast.

79. That is to say, recruited into the detachments of the imperial *tagmata* based in the eastern provinces, or into other units raised and paid on the same basis as these units — in contrast to the *themata* — which became increasingly important during the offensive warfare of the second half of the tenth century and afterwards. See KUHN, *Byzantinische Armee*, 123f. with older literature.

80. Slavs were transferred on numerous occasions from the Balkans to Asia Minor, beginning with Constans II and continuing through the eighth century. See DIETL, *Ethische Verschiebungen*, 207-297, esp. 263ff. From the information given here it is quite clear that they were not organised into regular Byzantine units — *banda*, *drouggoi* etc. — but rather in their own groups under their own local chieftains, possibly the leading landlords or their representatives.

[A] units	[B] Numbers (663.1-664.2; 664.7- 667.11)	[C] Pay (667.14-668.11)	[D] <i>Prochrcon</i> or <i>philoptimaia</i> (228.11-669.5)	[E] Rates of pay (662.11-663.1; 669.5-12)
[15] Charpezikion ⁸¹	<i>stratēgos</i> , whole <i>thema</i> , i.e. senior turmarchs, <i>kōmēs t.</i> <i>k.</i> , <i>dom.</i> <i>tou them.</i> , - 25; + lesser tur- marchs - 47 + <i>drouggos</i> - 205 + sol- diers - 428 = 705	22 chief turmarchs, 1 merarch, 1 count of tent, 1 <i>dom.</i> of theme paid @ 5 <i>nn.</i> + 47 lesser turmarchs @ 4 <i>nn.</i> + 205 <i>drouggarioi</i> @ 3 <i>nn.</i> + 428 soldiers @ 2 <i>nn.</i> - 24 <i>litrai</i> , 56 <i>nn.</i>	no entry	chief turmarchs, merarch, <i>k.</i> <i>tēs k..</i> <i>dom.</i> <i>tou them.</i> , @ 5 <i>nn.</i> lesser turm. @ 4 <i>nn.</i> <i>drouggarioi</i> @ 3 <i>nn.</i> soldiers @ 2 <i>nn.</i>

The majority of the figures given here do seem to tally for the most part: an obvious exception occurs at [14] (Bonn 666.22), where the Thrakesion figure is given as 41 *litrai*, 32 *nn.*, when it in fact adds up to 44 *litrai* 32 *nn.*⁸² But when we come to compare the information contained in *document 1* with that in *document 4* in particular, it will be seen that a number of changes seem to have taken place during the intervening period in the composition of the expeditionary forces which the empire could mount. These changes have some important implications for the social as well as the administrative and military history of the state in the tenth century, so it will be worth looking at them in greater detail. In the following sections, I will examine several themes upon which the analysis of these four documents can throw further light, from that of numbers and tactical organisation, through financial issues and resources, to the ships, their crews and their equipment. Once more, no reference is made to horse transports; but the reference at 663.13-14 to a shortage of transport vessels in general indicates that these were present (as in the 910-911 expedition), but not listed or otherwise dealt with in this documentation.

As well as the information concerning the make-up and pay of the fleet and land forces that were involved in the expedition, however, the documents for 949 include also long lists of technical and other equipment required for the outfitting of the expedition. The lists are repetitive and confused, and seem to consist in some cases of the same material repeated for the sake of informing a different department (or repeated

81. See *TIB* 2, 86 n. 260, 88; OIKONOMIDES, *Listes*, 241-242, 359. Established shortly before 949.

82. See also TREADGOLD, 'The Army', 124. Treadgold makes a number of other suggestions for emending the text: at 665.8, changing *pr'* to *pn'* to accord with the crew sizes given at 665.1 and 665.4. While establishing a certain consistency, I see no reason to emend the text, however, since we have no way of knowing whether such uniformity was indeed the case. Treadgold's other suggestions reflect the actual reading of the Ms. in contrast to the Bonn text: see 667.19 (Bonn 23, Ms. 83, rendering the figures and totals given at 667. 18-20 accurate to within 1 *nomisma*); or correct a clear copyist's error, as at 668.16, where the sum of 166:46 should read 166:48, as at 668.13 and 668.17 (TREADGOLD, *loc.cit.*).

from information originally provided by different departments to a supervisory authority). There are, upon closer examination, ten separate lists or enumerations of material, as follows:

- (i) 669.15-671.5 under the heading: *equipment for one dromon*
offensive and defensive arms for the 20 *dromones*⁸³
- (a) 669.15-670.6 " " " " " 6 *pamphyloï* and the *oustaka chelandia*
- (b) 670.6-10 equipment for artillery and sapping/entrenching, as well as for the *dromones*
- (c) 670.10-18 equipment for artillery and entrenching (mostly repeated from 670.13-16)
- (d) 670.18-671.5
- (ii) 671.6-19 under the heading: *what ought to be supplied from the eidikon for the fitting out of the 20 dromones*. This list specifies the number of each type of item to be supplied. The items not mentioned earlier include raw materials (copper, tin, lead, wax) as well as sails and other cloths. Of 22 separate items, 14 occur in (a), (b) or (c) above.
- (iii) 672.1-15 under the heading: *what ought to be supplied from the department of the imperial vestiarion for the fitting out of the 20 dromones*.
The items specified here are mostly new: only sails and some tools (mallets, hammers) and a type of ring or bolt (*psellia*) occur in lists (ii) or (i, c), and are clearly not simple repetitions.
- (iv) 672.16-673.11 under the heading: *for the fitting out of 4 tetrareai, 4 labdareai, 4 magganika*
- (a) 672.16-673.3 items for the artillery, mostly repeated from (i, c and d), but specifying numbers of items.
- (b) 673.3-11 items connected with fitting out ships: cables, ropes, anchors, chains, slings, nails etc. Note that at 673.9-10 the reference to 24 *siphones* for 50 *pamphyloï* must be a copyist's error: it is clear from 664.7-8 that there were only 8 *pamphyloï*; and from 672.3 that *dromones* had 3 *siphonia* each. We may reasonably emend the text to 8 *pamphyloï* (with 3 *siphonia* each = 24), on the assumption that the copyist wrote out the word *pentēkonta* for fifty, mistaking the letter η = 8 for ν = 50.
- (v) 673.12-676.17 under the heading: *what was spent by the department of the eidikon for the expedition to Crete*
- (a) 673.12-676.3 A long list specifying the cost of the various items to be supplied by the *eidikon* and listed in (i) - (iv) above; in addition, the costs of sails and sailmaking are listed, as well as the additional expenditure for the fitting out of 9 Rus' ships and 2 single-decked vessels for the 'prisoners' in imperial service (673.15-16; 674.7-675.6). The list also includes money paid for a variety of items to the *archōn* of the *armamenton* Joachim (673.20-674.7); as well as to a founder or metal worker (Michael) for work on the liquid fire siphons (675.20-676.2). There are some discrepancies in the figures; but since not all the items are priced, nor all the information to resolve the problems is supplied.
- (b) 676.3-10 material supplied to the *drouggarios* of the imperial fleet, apparently for his personal retinue (metal table- and cooking-wares).
- (c) 676.10-14 bow-strings and lead supplied by the *eidikon* for the ships of the imperial fleet
- (d) 676.14-17 arms and weapons supplied by the the lower armoury (the *katō armamenton*), to the *drouggarios* of the fleet.
- (vi) 676.18-677.13 under the heading: *what was given from the department of the vestiarion to the drouggarios of the fleet as extra supplies for the expedition to Crete*

83. Cf. *Naumachica*, I, 14 (= 6, 12).

A list of hardware and other materials — nails, hemp, pitch, tar, cables, bolts, tackle of various sorts, for the fitting out of vessels — with quantities of individual items given. Most items occur in the earlier lists, esp. (ii) - (iv) above.

- (vii) 677.14-17 under the heading: *what was given from the koitón to the drouggarios of the fleets for expenditure during the expedition to Crete*
 A brief list of 6 sets of valuable clothing (to be used for paying foreign leaders or important deserters). This list corresponds to that in a near contemporary account of such items which should be taken on imperial expeditions for distinguished refugees and important foreign leaders.⁸¹
- (viii) 677.18-678.10 under the heading: *what was given to the same drouggarios on account of the same expedition*
 A slightly longer list of less valuable items, for similar purposes, corresponding to similar advice in the treatise on imperial expeditions.⁸²

What the documents here included appear to represent, therefore, are several stages of a single process, by which the administrators in charge of calculating what the different parts of the imperial fleet required from certain central bureaux and their warehouses set out their needs in a series of orders or memoranda, which were then transmitted to the departments in question. The departments concerned will then have replied as appropriate, and lists of what was actually provided, and to whom, together with the expenditure incurred, will have been drawn up, copies of which must have been sent to the departments or individuals who made the requests.

The lists represented in this document seem to be partly or wholly drawn from this material, from the *eidikon* and the *vestiarion* especially, but touching on the affairs of the *armamenton* also. Lists (i) - (iv) represent the list of requirements, effectively in two variant forms: a general list, followed by a more detailed list specifying in many cases the numbers of items. List (v) then gives a breakdown of the cost of some of these items (but by no means all of them). We may assume that, in many cases, the warehouses of the departments of the *eidikon* and *vestiarion* already had the materials required in stock. List (vi) enumerates extra supplies for ships of the imperial fleet; and lists (vii) and (viii) the clothing to be given to the *drouggarios* for payments to foreign dignitaries, refugees and so forth (compare the list of similar items sent to Hugh of Italy in the list for 935, above).

There is some confusion in the order in which the different lists present the material, and the headings given to the lists by the copyist or redactor do not represent, in many cases, the actual contents or the purpose I have assumed for them here. A good example is list (v[d]) which would fit better with the material in the following list (vi) as connected with the lists of items given to the *drouggarios*, but is placed in this context presumably because the lower armoury came under the auspices of the *eidikon*. Similarly, lists (i[c], [d]) contain several repetitions, suggesting either that the copyist had at least two sets of documents dealing with these matters, or that he copied some material twice. In either case, however, there can be little doubt that the text does not represent a single complete or unitary document dealing with such matters, but rather

81. See HADDON, *Three Treatises*, [C] 234-249

82. *Ibid.*, 250-260.

extracts made from such documents, either at the time of the expedition (for accounting purposes), or later when a search for such material became relevant (in the period leading up to the expedition of 961, for example).

4. Sources, origins and purpose of the documents

Having briefly examined the contents of the documents for the expeditions of 911, 935 and 949, we may now ask some questions about the origin, function and purpose of the material in Chapters II, 44 and 45 of the *Book of Ceremonies*.

As can readily be seen from a cursory reading of the texts, information from at least three, if not four departments of the government at Constantinople was involved: explicitly mentioned are the *eidikon*, the *koitōn* and the imperial *vestiarion*; and the *armamenton*, a sub-department of the *eidikon*, is also mentioned in the documents for 949; while the role of the thematic *prōtonotarioi*, subordinates of the department of the *sakellion*, is also central. The departments of the *stratiōtikon* and that of the *genikon logothesion* are not explicitly mentioned, but must have been involved. Although the information provides a fairly exact account and a great deal of detail of many aspects of the expeditions, it is by no means exhaustive; in other words, much more information about specific issues must have been available in the respective state bureaux than was copied into the dossier which ultimately formed the basis for these records. We have already noted the complete absence of any reference to horse-transports; yet, as we will see below, some evidence for the stalls and accommodation for horses or other animals on board ship can be drawn from the lists of materials to be provided by the thematic officials in the 911 material. And the fact that the fleet accompanying the invasion of 961 appears to have been much larger, yet definitely also included horse-transports, suggests again that the latter are simply not listed in this material, for reasons unknown. The figures given for numbers and pay do not match neatly when they recur, strongly suggesting that the documents incorporate several different stages of the process through which the expeditions were organised.⁸⁶ They also suggest that someone has gone through some of this material, at some point, with a view to editing it and extracting the essentials, omitting or suppressing certain items, as not relevant to their purpose, in the process.

An obvious question arises as to the original form of the material, which has not been incorporated into any larger document with an introduction or conclusion, nor indeed possesses any sort of rationale or justification: does it represent first-hand research and sifting of archival materials, with the deliberate intention of producing this sort of record? If it does, it was clearly never completed, and only attained a relatively crude stage of development. Or does the final document embody several stages of a standard bureaucratic process, elements from which have been excerpted and then transformed into a functionally different sort of account? This seems to me a more likely possibility.

86. As I have argued above, this does not necessarily mean that the material is inconsistent or internally incompatible, merely that we do not know the final rationalised version of the accounts, of which the existing documents are but one stage in the process. For the size of the fleet of the 961 expedition, see n. 394 below.

In this case, it is reasonable to suppose that the documents in fact embody parts of standard administrative procedure during and after any military expedition of this sort. Relevant information from each of the departments involved would thus be forwarded to a central point, during or just after an expedition, as a means of accounting for overall expenditures and outlay in men and materials.⁸⁷ This would have been a usual procedure; but in this particular case it was followed by a further and less standard procedure, namely the amalgamation of several such collections of material, concerning naval expeditions to Crete and Italy, at a later stage, and by someone interested in the costs and other details of the undertakings. It is possible that this was intended as a guide to those organising the expedition of 960-961, although the inclusion of the 935 material is then somewhat anomalous.

In support of this suggestion are the following points. First, the material is presented in a relatively disorganised form: partly in 'departmental' blocks — what role was played by different bureaux? — and partly in stages of a process: intended or planned numbers; actual numbers supposedly involved; amount of pay; amount of advance pay; and so on. The same format is followed in respect of the lists of equipment following the document for 949. The lists of details dealing with the provision of supplies and shipbuilding materials are clearly in part preparatory documents; but the actual state of affairs after the expedition (or at least, on completion of the preparatory stages), is also represented. In addition, and as we have seen, certain queries which were made, and to which answers were apparently satisfactorily given, remain in the body of the text, suggesting that the redactor simply ran several different notices together in the order in which he found them (or imposed upon them). Thus (i) at 660.1-5: the *kōitōnités* Theodoreto^s is instructed to check on the whereabouts of materials raised and delivered the previous year; (ii) at 667.1-6: a query about the number of Thrakesion troops present on the campaign in 949 is made. This is accompanied by the answer at 667.3-6; but a vastly more detailed account is given at 663.1-664.2; (iii) at 668.5-7 a query is made about the pay of the three naval *themata* (accompanied by the answer at 668.7-19).⁸⁸

No serious attempt appears to have been made to present this in a consequential manner consistent with a single document with a purpose. The repetition of the material concerning the Thrakesion contingent, noted above, is particularly obvious; similar repetitions occur elsewhere, notably at 667.6-11, where material which partly duplicates that given at 662.17-22, concerning the Charpezikion units, is repeated. Given that this is the case, then it follows that the information included in each of the three sets of material must have been derived from more complete collections of

87. On record-keeping and bureaucratic procedures, see DOLGER, *Beiträge*, 92ff; and N. SVORONOS, 'Recherches sur le cadastre byzantin et la fiscalité aux XI-XIV^e siècles: le cadastre de Thèbes', *BCH* 83, 1959, 1-166, esp. 57-63. See also, although for a later period, N. OIKONOMIDIS, 'La chancellerie impériale de Byzance du XIII^e au XV^e siècle', *REB* 43, 1985, 167-195. While the techniques and types of record discussed in this literature are not directly comparable with the material in our texts, the general framework of record-keeping and the bureaucratic process provides a good context within which the process suggested above can be understood.

88. JINKINS, *De adm. imp. comm.* 209 (to §§3, 507, 510) correctly concluded that the material from 662.11-664.2 belonged to the 949 documentation, but thought also that it had been 'misplaced'; whereas in fact the organisation of the material seems never to have been particularly carefully carried out in the first place.

information kept in other departments. This much is apparent from the fact that where information is repeated, it is often repeated in a slightly different format or with a different emphasis from the first occurrence. Such information has been excerpted, then, from fuller sets of records, and forwarded to some central supervisory point; and it probably was intended to have a short-term rather than long-term existence.

Additional support for this argument can be derived from the slight evidence for the original format of some of the material listing units, numbers and pay, especially at 655.12-656.3. Here, as noted already, the copyist appears to have been working from clerical lists, probably arranged in a columnar form, in which column headings were simply repeated for each entry copied, thus leading to the inclusion of headings when no item of expenditure had been recorded in the original. If accepted, this suggestion gives us some useful insights into the forms of clerical record-keeping employed in the imperial *sekreta* at Constantinople, for it must have been from this material that the redactor assembled his documentation.

A further pointer to the function of the original collections of material as post factum accounts of what had taken place is embodied in the texts for the 911 expedition, in which one of the queries is to be answered by the appearance of certain notarial officials, together with their records, before 'us', which most probably means the emperor. Again, this suggests the immediacy and relevance of the documents assembled to a particular military and accounting context, and gives us some insight into the workings of the central administration. For it is clear that when the final reckoning of costs and losses was made, the emperor could have a direct role to play.

Finally, we may ask why there is no reference whatsoever to the losses incurred in the two expeditions: surely, if these accounts were drawn up after the defeats, then the losses would at least have been registered? A definite answer is not possible. On the one hand, it may be that that information was indeed given (and the text at times certainly gives the impression of having been the result of a final accounting) about the outcome, but that it was not relevant to the final redactor's purpose (i.e. whoever decided to have the material collated and incorporated into the Leipzig Ms.). On the other, it may be that the statement represents an interim stage, after the departure of the expeditions, and thus reflects only what was known at this time rather than afterwards. In support of this is the nature of the statements of pay, which in the case of the Mardaites of the West in 949 were to be drawn over four months, expressed in such a way as to imply the coming period, rather than the past. But this may just reflect the raw quality of the data incorporated into the document. Similar considerations apply to the repetitious lists of equipment in the second part of the documents for the 949 expedition.

In the last analysis, much of this remains hypothetical. All we can say with a reasonable degree of certainty is that:

(i) these documents represent raw material extracted from the records of several departments;

(ii) they appear to represent a standard, post-campaign accounting procedure under the emperor's (or his closest representative's) surveillance; although also included, most apparently in the material for 911, is a great deal of information from the early planning stages of the expedition, including details of materials needed for ship-construction and related matters;

(iii) a person or persons unknown obtained copies of extracts from this material at some later date, i.e. after 949, and filed them together, again for reasons which remain obscure (but which may be connected with the plans for the expedition of the early 960s) — it is even possible that the material was collected in order to provide information which could be employed to argue against another expedition. A first version of the material in its entirety may have been drafted at this point. The material in its present form, therefore, and in contrast to Bury's conclusion,⁸⁹ does not represent official documents of the reigns of Leo VI, Romanus I and Constantine VII, but rather the heavily-edited results of a deliberate process of selection and amalgamation of such material, probably from several different archival sources in the palace. Finally,

(iv) the material was copied out again and incorporated alongside other miscellaneous material, including items connected with the military organisation of the empire, by whoever commissioned the Leipzig Ms. Their survival is thus the result of a remarkable combination of circumstances, involving both the personal interest of court officials and standard bureaucratic procedures.

5. The language and vocabulary of the documents

The texts are compiled in a language which has been characterised elsewhere as the practical Constantinopolitan technical and administrative register, not unlike that of contemporary or near-contemporary documents such as Leo's *Tactica* and documents of a similar bureaucratic-administrative interest and function incorporated into the *De ceremoniis*. Our documents contain in contrast, however, far less continuous prose for, by their very nature, they consist for the most part of lists, either of specific items, or actions taken or to be taken; or orders issued and the results which followed. In this respect, they represent a more immediately clerical-administrative language than is to be found in most other texts of the period, and are perhaps to be compared in many ways with — without suggesting that they are the same as — documents such as the cadaster of Thebes or the fiscal/metrological handbooks of the period.⁹⁰

Quite apart from the large number of technical terms for military units, titles and ranks, the majority of the numerous specialist terms and words which occur in these texts are Greek and of late ancient or medieval origin. But they include a great variety of often obscure terms, relating in particular to the armament of warships and items of artillery and siege equipment, which are not always easily resolved, partly because no adequate study of these subjects yet exists. Several issues of sailing and manning, of hull construction and development of ships, on the one hand, and of Byzantine artillery and its evolution from the fifth and sixth centuries, need to be resolved before these terms can be made meaningful. Nevertheless, they illustrate the wealth of medieval Greek

89. BURY, 'Ceremonial Book', 217.

90. See HALDON, *Three Treatises*, 70f. For the fiscal-administrative guides, see esp. J. KARAVANNOPOULOS, 'Fragmente aus dem Vademecum eines byzantinischen Finanzbeamten', in *Polychronion Festschrift Franz Dolger zum 75. Geburtstag*, Forschungen zur griechischen Diplomatik und Geschichte 1, Heidelberg 1966, 318-334; DOLGER, Beiträge, 6ff.

technical language — surprisingly few of the words are borrowed from either western or eastern neighbours, for example (in contrast with the vocabulary for personal military equipment, cavalry harness and so forth).

Part of the problem lies in the lack of any clear specific context in which to interpret many words — this is particularly true of terms which seem interchangeable, such as *tzokos* and *seistē*, respectively sledge-hammer and mallet, although another possibility for the latter is crowbar or lever.⁹¹ Equally, there are a large number of specialist compound words describing particular items or sets of equipment: *logchadrepanon* (rigging-halberd/pike),⁹² *cheirotoxobolistra* (hand-held or -drawn frame-mounted tension bow),⁹³ *xylopyrgos* (wooden [siege-] tower), *krikellopagouroi* (rings and bolts), *axinorygia* (wide-bladed pick-axe),⁹⁴ *anagokatagonta* (?winches), *skalodemata* (mooring cables), *chytrakkabia* (earthenware cauldrons), for example.⁹⁵

A considerable number of terms are obscure: apart from compounds such as *anagokatagonta*, *krikellopagouroi* and *skalodemata*, there are technical terms associated with artillery equipment and ships, the exact meanings of which remain unclear: thus *tetraea*, *labdarea*, and *eilaktia* (or *elakatia*), as well as *magganika*, are words all referring to specific types of artillery; but their exact significance remains to be determined.⁹⁶ The meaning of several words for different types of ring or link, connected with both artillery and the ships themselves, similarly remains uncertain: *krikelllos*, *pagouros*, *psellion*, *daktylos*; while it is difficult to work out to what context words such as *anagontitea* and *paradraktia* should be attributed. By the same token, several items are listed in connection with the liquid-fire projecting devices — unworked tin, cotron, *tetrakoula*, and so forth — difficult to interpret because the exact nature of these projectors remains problematic.⁹⁷ A good deal of further lexicographical work will need to be done, both in respect of ancient and Hellenistic Greek technical language, as well as in respect of medieval maritime terminology, before some of these questions can be even partially resolved. I present below a list of some of the more problematic or interesting terms and phrases, and discussion where appropriate. The suggestions for interpretation made

91. Σειστή is clearly derived from σείω, shake or heave; cf. Pontic σειστή, crowbar/lever (A.A. PAPADOPULOS, *Ιστορικον λέξεων τῆς Ποντιακῆς διάλεκτος*, Athens 1961, s.v.). *Tzokos* derives from middle Persian *cikoc*, pick-axe or hammer. Cf. B. HINNEMANER, '158 noms communs grecs d'origine iranienne, d'Eschyle au Grec moderne', *BSL* 30, 1969, 18-41, see 29; *Sudae Lexicon*, ed. A. Adler, Leipzig 1928-1938, IV, 373.5; A. STEINER, 'Byzantinisches im Wortschatz der Suda', in *Studien zur byzantinischen Lexikographie*, E. Trapp, J. Diethart, G. Fatouros, A. Steiner, W. Hörandner eds., *Byzantina Vindobonensis* 18, Vienna 1988, 149-181, at 162. Both terms occur in other middle Byzantine military treatises: cf. NICIPIU, *Tact.*, ed. Foucault, §65.17.

92. See KOHLAS, *Byzantinische Waffen*, 198-199.

93. See below.

94. See HALDON, *Three Treatises*, [C] 130 and comm., 199.

95. For the structure of the various categories of compound formation in medieval Greek, see A. STEINER-WIBER, 'Merkmale der byzantinischen Wortbildung anhand der Komposition', in *Lexicographica Byzantina*, W. Horandner, E. Trapp eds., *Byzantina Vindobonensis* 20, Vienna 1991, 235-248.

96. See below.

97. For one interpretation of the evidence, which has, however, met with only partial acceptance, see J.F. HALDON, M. BYRN, 'A possible solution to the problem of Greek Fire', *BZ* 70, 1977, 91-99; and below.

here, and in the commentary and translation to the appropriate sections of the forthcoming edition, remain provisional and in many cases entirely hypothetical.

658.19 τὰς πάθνας: Hellenist. form of aG φάτνη or πάτνη (cf. LSJ s.v. φάτνη and Du Cange 1078 s.v. πάθνη), ribbed wooden framework, crib, manger, rack; it is very likely that these terms are to be taken literally, as the mangers or stalls (cf. πάτνωμα: a wooden panel/partition), and gangplanks, for the transportation and accommodation of the cavalry horses.

An alternative possibility, less likely, however, than the aforementioned, is that this may refer to the frame of the hull and ribs, or the frame within which the hull was laid down and planked. Since the limited evidence for shipbuilding techniques suggests that from the seventh century ships were constructed by building up the frame plank by plank as far as the water-line, at which point frames were added (rather than employing the shell-construction method up to the gunwales, as in traditional Mediterranean fashion), the term *pathnai* may well describe the appearance of such half-finished hulls, for which the requisite supplies listed here were required to complete. But since there are several other technical terms available, however, which one would usually expect in such a context, the first suggestion made above is to be preferred.⁹⁸

659.1 λόγῳ χελώνων καὶ σκάλων καὶ λοιπῶν κατέργων... the term *chelōnai* usually referred to wheeled sheds used in approaching the walls of a besieged town or fortress; *skalai* generally referred to a wharf or landing-stage (see below), or a ladder.⁹⁹ If these are meant — and this is most probable — then we should again take the text literally. But in the context of fitting out ships, which may be indicated here, these terms might also have possessed a technical value — *skalai*, for example, can also mean 'stage' in the sense of working platform; the *chelōnai* may be some sort of cover or scaffolding used in boat construction (in Roman and Hellenistic treatises on artillery the term is also used to refer to any raised or embossed element of a complex structure).¹⁰⁰ *Katerga* signifies labour or job, and is associated with boats; it later came to mean galleys.¹⁰¹

659. 5-6 διὰ τὰς γερακαραιάς καὶ τοὺς διαπάτους... The *gerakaraiai* appear to be a kind of crane (*γέρανος*), perhaps deriving from *gerakari* (little falcon), possibly similar in shape to the gamma-shaped derricks described in *Naumachica* 1, 68 (Leo, *Tact.*, xix, 60: for tipping pots of hot pitch onto enemy ships). The *diapatous* may be the planked walkways of the *skalai*. It is again possible that all these terms are connected with the transport and accommodation of horses.

98. See ODB, 1889 (art. 'shipbuilding') and literature; and AHRENS, PRYOR, *Mer.*, 420ff. Many of the items listed here are dealt with in JUUREYS, PRYOR, *Dromon*, where a more detailed discussion will be found. I am extremely grateful to the authors for allowing me to consult the manuscript prior to publication, and to John Pryor for the suggestion that the terms in question here may be associated with the transportation of horses: the Greek term *πούνη* may be the equivalent in this context of the medieval Lat. *catena*: see PRYOR, 'Naval architecture'.

99. See KAHANI, THIZI, *Lingua Franca in the Levant*, 568-572; also KAHANI, 'Sprache', col. 410.

100. See, for example, Heron's *Belopoeica*, 85, 93.

101. See KOUKOURIS, BBP 5, 346; KAHANI, THIZI, *Lingua Franca in the Levant*, 523-526; E. KRIARAS, Λεξικό τῆς μεσαιωνικής ελληνικής δημιούρου γραμματείας (1100-1669), Thessaloniki 1968ff., VIII, 88. G.W.H. LAMPTY, *A Patristic Greek Lexicon*, Oxford 1961-1968, s.v. *katergazomai*.

660.20 μεναύλιο: heavy infantry spears (Lat. *venabulum*).¹⁰²

669.21 τοξαρέας 'Ρωμαίας σύν κόρδων διπλῶν: since there are 50 such weapons for each *dromōn*, the term τοξαρέας 'Ρωμαίας presumably refers to the standard Byzantine composite reflex bow, as described in the mid-tenth-century *Sylloge tacticorum* (§39.4), a weapon of some 117-125cm (45"-48") in length. The same treatise also recommends that soldiers equipped with bows carry two bowstrings.¹⁰³ It is unclear whether the reference here to double strings means two strings for each bow, or strings doubled together by plaiting, typically used in heavier artillery.¹⁰⁴

669.21-670.1 ναύκλας μετὰ χειροτοξοθολίστρων καὶ κόρδων μεταξιτῶν

ναύκλας = lat. *navicula*, normally referring to small boats. In this context, a boat-shaped platform or frame upon which the bow-ballistae were mounted seems the most likely interpretation.¹⁰⁵

μετὰ χειροτοξοθολίστρων: the construction of torsion-powered artillery seems to have declined during the later fifth century. The artillery described by Procopius (*BG* i, 21.14ff.) is tension-powered; and the vocabulary employed in the Byzantine military treatises, where it sheds any light on the matter at all, reinforces this probability: the term *cheirotoxobolistra*, with the use of the term *toxon*, bow, for example (Roman torsion-powered machines were frequently differentiated from tension machines by the presence or absence of this term).¹⁰⁶ The difference between a *toxobolistra* and a *cheirotoxobolistra* was one of size; but it may also have been spanned differently, the latter being placed under tension by manual stretching of the string, the former mechanically by a windlass at the end of the stock: note the contrast between *cheirotoxobolistrat* at 669.21-670.1 and the *megalai toxobolistrat* *meta trochiliōn...* (large bow-ballistae with pulleys) at 670.10-11. Both types of weapon are referred to,

102. See E. McGILVER, 'Μεναύλιον - μεναύλιτος', *Diplycha* 4, 1986-87, 53-57; M.P. ANASTASIADIS, 'On handling the *menavlon*', *BMGS* 18, 1994, 1-10.

103. *Syll. tact.*, §38.8; cf. KOHL, *Byzantinische Waffen*, 215f. The bow was referred to both as *toxon* and *toxarium*, cf. e.g. *Strat.*, i, 2.12; 32 etc.; *Lio. Tact.*, vi, 2; 25 etc.

104. Cf. for example, although from an earlier period, Ammianus' description of the string of the field-ballista of the later fourth century: cf. CHIUDDEN, 'Artillery in late Antiquity', 153 and n. 94.

105. Cf. for example A.G. PASPAKIS, *To Λιακον Ιλασσοφιον ἦτοι ἡ ἐν Λιώ λοδοπηνή γλωσσα*, Athens 1888, s.v. ναύκλιος, a broad basin or tray.

106. The evidence for the continued use of simple torsion-powered machines is ambiguous. Current opinion favours its limited use in the simplest form (the vertically-mounted *onager*-type weapon), constrained by the fact that such machines were both more difficult to construct and very much heavier than the equivalent traction-powered engines. See CHIUDDEN, 'Artillery in late Antiquity', 148 and 160-163; and K. HUURI, 'Zur Geschichte des mittelalterlichen Geschützwesens aus orientalischen Quellen', *Studia Orientalia (Soc. Orient. Fennicae)* 9/3, 1941, 51-63, 212-214. K. Huuri (80, and n. 2) thinks that a passage in Heron of Byzantium may indicate knowledge of torsion weapons, but the issue needs further clarification. For further discussion see W.S. TAYLER, 'The Traction Trebuchet: a reconstruction of an early medieval siege engine', *Technology and Culture* 36, 1995, 136-167, at 142 and n. 36; and for a survey of the debate, R. ROGERS, *Latin Siege Warfare in the Twelfth Century*, Oxford 1992, esp. 254-273. For the (apparent) continued use of torsion engines in the non-Byzantine medieval world, see D. NICOLLI, *Medieval warfare source book*, London 1996, 1, 50, 99; 2, 47, 85.

sometimes indirectly (e.g. as *cheiromaggana*¹⁰⁷) in the technical military treatises, and *toxobolistratī* appear in some of the narrative chronicles also. See, e.g., Maurice, *Strat.*, xii B, 6.8-9; 21.13; Leo, *Tact.*, v, 7; *Praecepta*, 5.3; and esp. the naval treatises of the tenth century: *Naumachica*, 1, 60 (= 6.57); 7, 122,3; 10; 11. For examples from historiographical works: Theoph., 384 (for 716); Th. cont., 298.16.

The list of parts for and the references to the various pieces of artillery in this text gives some idea of the range of Byzantine siege techniques and technology. A number of points are worth noting. In the first place, if the total number of heavier pieces — the traction stone-throwers and cart-mounted tension bow-ballistae listed below — numbered only twelve (4 *tetrareai*, 4 *labdareai* and 4 *élakatia*), which is what these texts as a whole imply, then this would bear out the impression derived from the historical narrative sources, that Byzantine methods of laying siege to and taking fortified places relied primarily on the use of anti-personnel weapons (the various bow-ballistae mentioned here and in other treatises), the tortoise and battering-ram, and mining the walls of the objective. Large siege engines, such as are described in the ancient and in the classicising treatises, were a rarity, if they were employed or constructed at all. Indeed, Nicephorus Ouranos actually says that even the tortoise and the various types of special siege-ladder¹⁰⁸ were strange to his generation, and that sapping the walls was the main tactic employed by Byzantine forces. The majority of the sources which deal with siege warfare, from both the offensive and the defensive aspect, lean heavily, and in some cases almost entirely, for their repertoire of techniques and weapons on Roman and Hellenistic treatises or histories, so that even when one can detect an effort to give the texts employed and the treatise as a whole a more up-to-date aspect — as McGeer has argued for the tenth-century anonymous *De obsidione toleranda* — their reliability in terms of providing information about what Byzantines really did in actual sieges is suspect. The literary sources are especially suspect: mention of *helepoleis*, for example, is often simply an additional flourish with which to give an account of a siege the appropriate tone; and sometimes whole accounts might simply be borrowed from ancient or late Roman models, as with Leo the Deacon's account of the siege of Chandax by Nicephorus Phocas in 960. The treatise of Nicephorus Outanos is in this respect refreshingly straightforward (or so it would appear), and is quite honest about the relative lack of sophistication, both tactically and technologically, of the tenth-century Byzantine army. Although the texts dealt with here suggest that more complex devices and artillery could be built and employed, it also suggests that it did not feature strongly in the panoply of an offensive field army.¹⁰⁹

107. See also MCGEER, *Sowing the Dragon's Teeth*, 65 (comm. to *Praecepta*, i, 150-155).

108. Described in detail in the ANONYMOUS, *Poliorcētika*, ed. Wescher, 232.13-238.11. The way in which Nicephorus lists these items suggests that he was familiar with this text. The fact that he suggests that its recommendations were not practised is important for any assessment of the realities of Byzantine warfare of the period, as McGeer notes. For the practice of his own day: NICEPHORUS, *Tact.*, ed. Foucault, §65.22; 65.25; and cf. § 65.17. See the discussion in E. MCGEER, 'Byzantine Siege Warfare in Theory and Practice', in *The Medieval City under Siege*, I.A. Corfis, M. Wolfe eds., Woodbridge 1995, 123-129.

109. Cf. SKUTTIZES, ed. Thurn, 34. 89-93, for *helepoleis* used by the army of Thomas the Slav during the siege of Constantinople. For Leo's account (closely following Agathias' description of the siege of Cuinae by Narses), see LEO DIAC., I, 5-9; ii, 7; and cf. AGATHIAS, I, 8-10; 11.5.

καὶ κόρδων μεταξιῶν: silk for bowstrings was not unusual, and was recommended, along with hemp, as an alternative to sinew by the mid-tenth-century anonymous treatise on poliorcetics ascribed to Heron of Byzantium.¹¹⁰

670.2 μῦας (or μύίας): 'flies', the term used for ballista bolts of various sizes.¹¹¹

670.11 χελῶναι: 'tortoises'. There were various types, usually roofed to protect the occupants, and equipped with rams (see 670.13), part of the standard equipment for siege-warfare.¹¹²

670.11 τοξοβολίστραι μεγάλαι μετὰ τροχιλίων: τροχίλια Lat. *trochlea*.¹¹³ Fixed-mount bow-ballistai spanned by a windlass/pulley (cf. the description given by Procopius, *BG* i, 21.14ff.: "those on each side wind it up tightly by means of certain devices — μηχαναῖς τιστ —, ...").¹¹⁴

670.12 τετραρέαι, λαθδαρέαι, μαγγανικά, καὶ ἡ τούτων ἐξόπλισις

τετραρέαι: both *tetrarea* and *petrarea/petraria* (cf. *Chronicon paschale* [Bonn] 719.22) are found: it remains unclear as to whether the texts with *tetrarea* (suggesting a device characterised by its quadrangular frame) are correct, *petrarea* being a hypercorrection (implying a stone-thrower), or vice versa. In the ninth-century *Scriptor incertus de Leone*, Bulgar siege engines are said to include both *triboloi* and *tetraboloi*, which may be the equivalent of *labdareai* (see below) and *tetrareai* respectively (in: *Leonis Grammatici Chronographia*, ed. I. Bekker, CSHB, Bonn 1842, 335-362, at 347.13-18). The weapon appears to be a traction-powered counterweight device, or trebuchet, described in the seventh-century *Miracula Demetrii* as very tall: see §139 (p. 148.27-28) and §255 (p. 214.24).¹¹⁵ In the first case the term is *petrobolos*; in the second, *petrarea*. Their operation clearly involved some technical knowledge and skill: at one point the defenders of the city received the assistance of sailors — described as *empeironmagganous* — from ships which had put into the port, to operate their *petrareai*. See §206 (p. 187.23), §209 (p. 188.14-15). See the detailed description of such machines constructed by the Avars during the siege of Thessaloniki in 586, the first

110. Ed. Wescher, 253.14ff. See also KOLIAS, *Byzantinische Waffen*, 251 n. 62; and SULLIVAN, 'Tenth-Century Byzantine Offensive Siege Warfare'. The forthcoming new edition, translation and commentary of this text by D. Sullivan should cast much-needed light on the subject of Byzantine artillery in general.

111. See KOLIAS, *Byzantinische Waffen*, 242-45 with sources and literature; also D. NISHIMURA, 'Crossbows, Arrow-Guides and the Solenarium', *Byz.* 58, 1988, 422-435; and CHEVEDDEN, 'Artillery in late Antiquity', 146f., 148 and n. 77. G.T. DYNES, 'Flies, mice and the Byzantine crossbow', *BMGS* 7, 1981, 1-5, argues that the correct term for the bolts used by these weapons was 'mice' (μύτε), but Korias (*loc. cit.*) has shown that 'flies' (μύνται) was in fact the original form, confused in the manuscript tradition.

112. See E. MCGILL, 'Byzantine Siege Warfare in Theory and Practice', in *The Medieval City under Siege*, I.A. Corfis, M. Wolfe eds., Woodbridge 1995, 123-129; and the detailed descriptions in the ANONYMOUS, *Poliorcētika*, ed. Wescher, 206.14-207.16; 208.1-209.1; 225.8-229.20.

113. The term *trochilos* means any pulley-wheel or other small wheel, depending on the context: see HERON, *Belopocica*, 42.

114. And cf. AMMIANUS MARCELLINUS, *Res gestae*, xxiii, 4.1-3 (with Chevedden's discussion, 'Artillery in late Antiquity', 153, n. 95); MARNDEN, *Greek and Roman Artillery*, 57.

115. P. LEMERLE, *Les plus anciens recueils des miracles de saint Démétrius et la pénétration des Slaves dans les Balkans*, I, Paris 1979.

evidence for their introduction to the western world via the steppe from China: ed. Lemerle, I, §151 (p. 154.9-17): "these (*petroboloi*) were quadrangular, rising from broad bases to narrower tops, upon which were thick cylindrical (pieces) with the ends covered in iron, and onto these were affixed timbers like the beams of houses, having the slings suspended from the rear, and from the front sturdy ropes". By pulling on the ropes, the team could project heavy stones considerable distances.¹¹⁶ It is, however, also possible that the various large weights referred to in association with these machines later in our tenth-century text are in fact the weights for the arms of counter-weight rather than traction trebuchets; although the first reliable evidence for such machines is not until the later twelfth/early thirteenth century: in the twelfth-century Madrid manuscript of the history of John Skylitzes, for example, there are two illustrations of a traction-powered (manually-hauled) trebuchet, one of which, depicting the siege of Mopsuestia in 965 (fol. 151v) shows the device based on a single central stanchion or post supported by a framework of three or four subsidiary posts attached laterally half-way down, with the catapult-arm affixed by a swivel or hinge at the top, and a number of ropes descending from the shorter end; the second, showing the Byzantine attack and capture of Preslav in 971 (fol. 166) shows two men preparing to haul on the ropes, and a third loading the sling with stones.¹¹⁷ The term *tetrareai* (and *tetrabolos*) may thus describe their quadrangular, four-post frame, while at the same time being easily confused with the more functional *petrarea*.

λαθηρέαι: these appear also to have been stone-throwing devices, presumably mounted on a lambda-shaped frame, possibly also a traction-powered counterweight machine. Compare for another meaning of the term Leo, *Tact.*, xi, 26 for a description of a smaller, three-legged anti-personnel device (called a *triskelion*) set up around encampments to binder enemy attacks. This consisted of two stout lengths of wood lashed together, with a heavy infantry spear — *menalion* — lashed across the fork at the top. The *Tactica* refers to it as a *labdaraia*. The tenth-century anonymous treatise on

116. For other references to such machines cf., for example, *De obsecione tolcianda*, §14 (p. 48) and §66 (p. 56); Leo, *Tact.*, xv. 27 (= *Strat.*, x, 1.49-56, which, however, refers simply to *petroboloi* without specifying the type). See also D. CANCI, *Glossarium ad Scriptores mediae et infimae Graecie*, s.v., 1552; KAHANI, 'Sprache', col. 407 (*petraria*); and for the trebuchet in general, see D.R. HILL, 'Trebuchets', *Viator* 4, 1973, 99-116 (although the author is not aware of the account in the *Miracula Demetrii*); and W.S. TAYLOR, 'The Traction Trebuchet: a reconstruction of an early medieval siege engine', *Technology and Culture* 36, 1995, 136-167. For the Chinese origins of the traction lever machine, see J. NEEDHAM, 'China's trebuchets, manned and counterweighted', in B.S. Hall & D.C. West, eds., *On pre-modern technology and science: studies in honor of Lynn White Jr.*, Malibu 1976, esp. 111-142.

117. See D.R. HILL, 'Trebuchets', *Viator* 4, 1973, 99-116, at 103f. with the available evidence from Arabic sources. For the Skylitzes illustrations, see C. ESTOPÀN, *Skylitzes Matritensis*, I, Barcelona-Madrid 1965, fol. 151 b (with comm., p. 159-160) and 166 (comm. 170-171); A. GRABAR, M. MANOLSSAKIS, *L'illustration du manuscrit de Skylitzes de la Bibliothèque Nationale de Madrid*, Venice 1979, figs. 193 and 213, with commentary, p. 88, 93. For the date: N. WILSON, 'The Madrid Skylitzes', *Scrittura e civiltà* 2, 1978, 209-219. In the medieval western sources for the period before the first Crusade, a standard term for a stone-throwing device was *petraria*, a term now generally interpreted as referring to a traction-powered lever device. Whether the Latin term follows an earlier Greek term or evolved independently remains unclear. See ROGERS, *Latin Siege Warfare in the Twelfth Century*, 254-273.

siege warfare attributed to Heron of Byzantium describes the same device, and states that the *lambda*-shaped frame of the device, formed by the two main poles, was 5 *pēcheis* (2.28 m.) long.¹¹⁸ The *Praecepta* of Nicephorus II and the treatise of Nicephorus Ouranos describe the same device.¹¹⁹ The *labdarea* mentioned in this list cannot be the same item, since it is clearly understood as an artillery machine of some sort.

μαγγανικά: it remains unclear as to whether the term *magganika* refers simply to 'other machines', or to something more specific. Since the word *magganon* could also mean any block or block-and-pulley mechanism,¹²⁰ it may refer simply to other machines employing a windlass and/or ratcheted bracing device, whether of the bow-ballista type or not. The use of the non-specific term *cheiromaggana* in the *Praecepta* of Nicephorus II (*Praec.*, 5.3 & 5), suggests the bow-ballista; and the anonymous *De obsidione toleranda* § 14 (p. 48) differentiates between *magganika* and *cheiromaggana*. See also *De obsidione toleranda*, §66 (p. 56).¹²¹ Note that at 673.2-3, in a list of materials for 4 *tetrareai*, 4 *labdareai* and 4 *magganika*, iron for the large *toxobolistrat*i is included, strongly suggesting that the term *magganon* was indeed employed with reference to, or as an equivalent for, large bow-ballistae braced by a windlass.

670.14 κρικελοπάγουροι, φελλία καὶ δάκτυλοι: different types of and fittings for the artillery. The first term must refer to a ring attached to a (crab-shaped) clamp or 'claw' of some sort: note that at 672.17 there are 30 rings and 15 'crabs' (*pagouroi*). *Krikos* is used in the tenth-century Anonymous on poliorcetics, as well as in Roman and Hellenistic treatises, to refer to an iron ring or band used to tie two beams or bars together.¹²² There are similarly for the large *toxobolistrat*i 30 *psellia*, also fastenings of some sort, clips or clamps (one meaning for the word is 'shackles'¹²³) perhaps; and 15 *daktylois*, 'fingers', a term used in the poliorcetic treatises to refer to the rotating iron bolt with a claw at each end, attached to the pulley-mechanism of a bow-ballista, which drew the string back, and was released by the trigger. Alternatively, the term might mean — as in *daktylios* — a ring or staple to secure a bolt — again complementing the *psellia* in the lists (672.17-673.2).¹²⁴

118. HERON, *Belopoeica*, 205.8-16.

119. MCGIFFER, *Sowing the Dragon's Teeth*, 166 (comm. to NICEPH., *Tact.*, §65.69-72) and 350 n. 32; and E. McGIFFER, 'Tradition and Reality in the *Tactica* of Nicephorus Ouranos', *DOP* 45, 1991, 129-140, at 134-135.

120. See, for example, HERON, *Belopoeica*, 85, and the ANONYMOUS, *Poliorkētika*, ed. Wescher, 256.16-257.2.

121. See KAHANE, 'Sprache', col. 407.

122. Cf., e.g., ANONYMOUS, *Poliorkētika*, ed. Wescher, 253.5f.; HERON, *Belopoeica*, ed. Wescher, 101; 110; KRIARAS VIII, 389 (for *krikello*).

123. LAMPI, s.v.; and cf. ODB 175, 'armband' (i.e. a larger ring).

124. See the detailed account in HERON'S *Belopoeica*, 76-81 (with Schneider's explanatory notes in R. SCHNEIDER, 'Geschütze auf handschriftlichen Bildern', in *Ergänzungsheft zum Jahrbuch d. Ges. f. Lothr. Gesch. u. Altertumskunde*, II, Metz 1907, 64-65); cf. MARSDEN, *Greek and Roman Artillery*, 5. For *daktylos*, see LAMPI, s.v. (2). Apart from its everyday meaning of a finger or small ring (the latter usually in the form *daktylios*; cf. ODB 1796, 'ring'), *daktylos* was also a measure: a dactyl was 1.95cm. (1/16 of a foot); see SCHNEIDER, *Metrologie*, 16f.

670.15 σφενδόναι σιδηραὶ πετζέῖναι: leather-covered iron slings, presumably for the *tetrareai*. There were 12 altogether (cf. 673.3).¹²⁵

670.15-16 πόταλα πορτῶν λόγῳ ἐνδύσεως τῶν διαφόρων τροχιλίων: plates or cladding to cover the fittings of the pulleys or blocks on the various pieces of artillery and other devices. What exactly is meant by *portōn* remains obscure — possibly the openings in the blocks through which the halyards or other ropes were passed. At 673.2-3 the ‘usual amount of iron (fittings)’ for the large *toxobolistrai* is listed.¹²⁶

670.16-17 βαρέας: (iron) weights;¹²⁷ the term can also refer to hammers, or large beams. Cf. 673.2: 20 large and 30 smaller *bareai*; and 677.3-4 (as part of the additional supplies provided by the *vestiarion* to the *drouggarios* of the fleets), 10 *bareai* and 24 *cheirobareai*. In ship-to-ship fighting, iron and stone weights were to be dropped by cranes into the waist of the enemy vessel in an effort to sink it: see, e.g., *Naumachica* 1, 7; 5, 3.2; 6, 6, where they are listed as part of the equipment of the *xylokastra*, the fighting-towers, on each large warship.¹²⁸ Similar methods were employed against siege-machinery on land: see *De obsidione toleranda*, §14 (p. 48), for example. The limited number of these weights, however, and their direct association with the stone-throwers and other artillery, would support the suggestion voiced above that these were the weights for the counterweight trebuchers. The combination of small and large weights would enable the artillerists to vary the range and velocity of missile dispatched, and would also fit this suggestion.

670.17 καπούλια: it is not clear what these were. There were 100 per *dromōn* (671.14), and they are listed along with other tools such as shovels (50 per ship: 671.14-15), barrels or tubs (10 per ship: 671.14) and cauldrons (10 per ship: 671.14). If the word derives from Lat. *scapula* (as in mod. Gk. *kapoulia*, flanks, shoulder-blades, haunches), then it may denote something for the oarsmen to sit upon: there were 100 on each vessel. On the other hand, a derivation from Lat. *capulus*, a handle or hilt, or *scapus*, a shaft or beam, is possible; in which case the term refers to some sort of lever or handle, perhaps a sort of belaying pin.¹²⁹

670.18 ὄφμελαύσια: a short-sleeved military tunic.¹³⁰ Why these are listed here is not clear, unless it has shifted meaning and applies to an item of equipment.

671.2 εἰλακτιῶν: another type of artillery; presumably a variant, or garbling, for the term ἡλακάτιον or ἀλακάτιον. The term means literally distaff or pole, but could also be used in later Greek of a winch for drawing nets out of the water, as well as, in the tenth-century treatise of Heron, a windlass, and was presumably its nickname (cf. the

125. For *petros/petrios* > vulg. Lat. **petsia* see KAHN, ‘Sprache’, col. 559; DU CANGE, 1159.

126. See JEFFREYS, PRYOR, *Dromon*.

127. See KRIARIS IV, 35; JEFFREYS, PRYOR, *Dromon*.

128. And cf. VIGETIUS, *De re militari*, vi, 44. For a detailed discussion of the evidence for, and the structure and form of these fighting-towers, see JEFFREYS, PRYOR, *Dromon*.

129. See REISKI, II, 792; DU CANGE, 588; KRIARIS VII, 348.

130. See MARCII, *Strat.*, xii B, 1.2; DU CANGE, 123.

late Roman *onager*, or 'mule', a torsion-powered vertically-mounted stone-thrower¹³¹). This machine is also referred to in the same contexts as the others (*De obsidione toleranda* §14 [p. 48], and Leo, *Tact.*, v, 7; vi, 27; xiv, 83; xv, 27; cf. also *Praecepta*, I, 151 [Kulakovskij ed. 5.3-4], and McGeer's remark, p. 65), but is in addition described as mounted on carts and swivelling from side to side (i.e. like the late Roman *carroballista*: Leo, *Tact.*, locc. cit. Cf. also Mautice, *Strat.*, xii B, 6.8, where wagons with *ballistae* swivelling to both sides are listed). In the *De obsidione toleranda* the 'so-called' *élakatai* are paired with *cheiromaggana*, and listed after *tetrareai* and *magganika*. In Leo, *Tact.*, xiv, 83 they are described as *ta magganika alakatia*, mounted on wagons; and at xv, 27, they are described as 'stone-thtowing *magganika* called *alakatia*', which can also shoot fire-arrows. This suggests that they must have been weapons with a slider, a windlass or similar mechanical spanning device and a trigger release and associated parts, which could be used to project both bolts and stones, similar to the late Roman *carroballista*, a carriage-based, swivel-mounted tension- or torsion-powered weapon. Tension-powered *carroballistae* were in use in the fifth- and sixth-century late Roman army, as described in both the anonymous *De rebus bellicis* and Procopius, probably using a reflex bow as the source of power.¹³² Other texts, including the *Scholia ad Thucydidum*, interpret ἡλωκάτιον as windlass. This evidence strongly suggests that the tenth-century Byzantine machine was most probably (and in view of its name) a frame-mounted tension weapon which could discharge both arrows and stones.¹³³

671.8-9 Μολίθιν λόγῳ τῶν κολυμβωμάτων ἀνὰ χαρτῶν ε'. ὅμοι χάρται ρ'. σταθμίον λίτραι: γ. βυρσάρια λόγῳ τῶν αὐτῶν κολυμβωμάτων κ'.

The copyist misunderstood his text: L has καλυμβωμάτων, and should have written *κολυμβωμάτων, derived from κόλυμβος, a well or sump, and hence referring to the bilges (or a section thereof) in which water was collected in the bottom of the hull. The intrusive μ supports this emendation. The reading in L, retained by Bonn, led to several misunderstandings — sheets of lead for some sort of covering (? καλύθιον, καλύπτω) — together with one hide per ship for 20 *dromones* (this explanation cannot apply to the hull, for example: the amount of lead specified per vessel is quite small — each sheet of lead weighed 30 *litrai* [i.e. 9.6 kg/21.12 lbs], making a total per ship of 150 *litrai* [48 kg/105.6 lbs]).¹³⁴ Reiske thought the lead was for the hull, however (II, 794): Koukoules (BBP 5, 352f.) thought it was for the stern cabin, or *krebbation*. Lead is, however, waterproof and non-corroding, was regularly used in the ancient and medieval world for drainage and water-proofing purposes, and would be better employed in the context of a well or sump in the bilge of a vessel. The fact that all the *chelandia* were to

131. See CHAUVIDEN, 'Artillery in late Antiquity', 137ff.; and SULLIVAN, 'Tenth-Century Byzantine Offensive Siege Warfare', 199 with references.

132. See CHAUVIDEN, 'Artillery in late Antiquity', 154-163 for the sources and their interpretation (PROCOPIUS, *B.G.*, I, 21.14-18; *Anonymi auctoris: De Rebus bellicis*, ed. R.I. Ireland, Leipzig 1984, §vii).

133. Cf. DU CANGE, 474f.; *Suidae Lexicon*, ii, 559 no. 190. For its application to a winch see DEMETRAKOS, s.v. ἡλωκάτη (2). Note also SULLIVAN, 'Tenth-Century Byzantine Offensive Siege Warfare', 199 n. 51.

134. JEFFREYS, PRYOR, *Dromon*.

be issued with a similar quantity of lead (676.12-14) may lend some support to this hypothesis.¹³⁵ The reading σταθμίον is supported by Ducas, Bonn 270 (σταθμίον λίτραι πεντακόσιαι), rather than ἐν σταθμῷ (which conveys the same meaning, as in *Pap. Lond.* 979, 17: εἴτε ἐν σταθμῷ εἴτε ἐν νομισματίοις).

671.10 τριβόλια χιλιάδες φ': 500,000 caltrops may seem excessive for 20 warships. But these four-pronged iron devices were intended to be catapulted, dropped or thrown on board enemy ships as anti-personnel weapons. See, for example, *Naumachica* 1, 63; 66; 6, 59; 60.

671.15 κόρδας μεταξωτὰς παχέας σπαρτίνας: these were clearly composite plaited strings for the large tension-spanned bow-ballistae, woven from a mixture of silk and spartum. They contrast with the simple spartum bowstrings 'for the small *taxobolistrai*' listed next (671.16).¹³⁶

672.3 σιφώνια ἀνὰ γ': 'siphons' for the liquid fire device, 3 per ship. The term *siphōn* had a variety of applications: a hose or water-lead; a tube or siphon (used to draw wine from a cask); a small water reservoir; a small earthenware pot (the last two deriving from the second). It could also refer to a tube through which liquids could be projected under pressure, as a very clear description in the *Poliorkētika* of Apollodorus (ca. 130 A.D.) makes clear.¹³⁷ In the context of liquid fire, it appears to have the specific meaning of a hose or tube through which or from which the liquid fire was projected.¹³⁸ The exact nature of these projectors remains debated. The various scraps of evidence for the way in which liquid fire was projected suggest that the weapon consisted of a tube attached, via a leatheren swivel joint, to a sealed canister containing crude petroleum, which could be placed under slight pressure before being released and ignited.¹³⁹

This view has been challenged from various quarters: thus Pászthory suggested that it was primarily a saltpetre-based explosive mixture, involving the firing of such a

135. See KAHANI, 'Sprache', col. 416; KOUKOULIS, *BPP* 5, 350; KRIARAS VIII, 238.

136. See above, on silken bowstrings; and KAHANI, TII 171, *Lingua Franca in the Levant*, 576f. (no. 850); KAHANI, 'Sprache', cols. 413-414; KOUKOULIS, *BPP* 5, 356-357, on ropes and cables in general on Byzantine ships.

137. Ed. Wescher, 174.4-5; 185.3.

138. See LSJ, and KAHANI, 'Sprache', col. 408.

139. J.F. HADDON, M. BARNI, 'A possible solution to the problem of Greek Fire', *BZ* 70, 1977, 91-99. The only pictorial evidence apart from these Byzantine references for a hand-held 'siphon' occurs in an Istanbul manuscript (Topkapi Ms. 3469) of the 15th century, where the text, accompanied by an illustration, shows a syringe/piston-pump, or *zaraqa*, attached by pipes to a brass box containing distilled oil. See Ahmad Y. AL-HASSAN, Donald R. HILL, *Islamic Technology: an illustrated history*, Cambridge 1986, 106-112, and 144-146. But the late date of the manuscript should encourage some caution in taking the illustration at face-value. Whether the Arabs had the same sort of device as the Byzantines, as maintained by Christides (see CHRISTIDES, *Conquest of Crete*, 29-32, 63-66, 92; 'Naval warfare in the eastern Mediterranean [6th-14th centuries]: an Arabic translation of Leo VI's *Naumachica*', *Graeco-Arabica* 3, 1984, 137-148, at 138-139; see also ID., 'Two parallel naval guides of the tenth century: Qudama's document and Leo VI's *Naumachica*', *Graeco-Arabica* 1, 1982, 51-103) seems to me open to some doubt; although that the Arabs had incendiary weapons involving the use of petroleum there is no doubt; nor that they had on their warships specialists responsible for the projection of this material. This question clearly deserves further discussion.

mixture through tubes.¹⁴⁰ Unfortunately, this theory ignores several crucial parts of the evidence (such as the petroleum component, which was clearly crucial for the Byzantines: cf. *De adm. imp.* §53, 493-510 [list of oil sources in the northern Pontic region]), and it is now generally agreed that petroleum, rather than any explosive mixture, constituted the key element.

In contrast, Korres argues that the weapon consisted primarily nor of a pump and tube-projector but of earthenware pots filled with inflammable material, launched by torsion-powered *ballistrai* (pp. 136ff., 142ff.).¹⁴¹ But this latter point ignores the fact that such a form of artillery did not survive into the Byzantine period, as noted already (although tension-powered weapons might have been employed). That *siphōn* could also mean small pot is not in doubt; but it is worth noting — as has recently been demonstrated — that the word was employed to describe a particular type of pot, a clay vessel constructed with an integral tube used for drawing off liquids (usually wine) from a larger container or vat.¹⁴² Such a usage, applied to the device hypothesised in Haldon, Byrne, *art. cit.* (n. 96), may perhaps lend greater probability to the notion that some such vessel could have been produced of bronze and on a larger scale.

It should further be noted that in the 949 document each *dromōn* is equipped with three *siphones*, while the 40 *ousiaka* (*chelandia*) are provided with two *siphones* each (672.3; 673.10). Equipping warships with only two or three such projectiles is obviously nonsensical; so that unless we are to assume that the catapults which are held to have projected the pots in question were also described as *siphones* (which seems highly unlikely), this interpretation becomes more than improbable. Furthermore, in the tenth-century treatises on naval warfare, garbled in places though they are, and dependent for much of their technical language on misunderstood terms from their Roman or Hellenistic sources, it is quite clearly stated that in the standard *dromōn* the liquid fire *siphōn* has built above it a gangway with a plank breastwork to protect the soldiers who are posted there to repel enemy boarders; which surely removes any doubt that *siphōn* was the term by which the Byzantines themselves referred to the device as a whole.¹⁴³

Some confirmation of the above-mentioned hypothesis derives from an obscure Latin text first noted in the context of incendiary weapons by R.J. Forbes. The text appears in Ms Wolfenbüttel, *Cod. Guelf. 96 Gud. lat.*, fols. 157r-v, and forms part of a miscellaneous compilation of texts, published and discussed by B. Bischoff in 1931. The text describes the 'inextinguishable fire' made by mixing naptha and tree-resin (?).

140. E. PASZTHORVY, 'Über das "Griechische Feuer". Die Analyse eines spätantiken Waffensystems', *Antike Welt* 17, 1968, 27-37.

141. Th.K. KORRES, 'Τγρον πῆρ, Thessaloniki 1989.

142. See G.S. MASTOROPoulos, 'Σιφων - σ(ι)φων: ἐπιβοστὴ ἐνος ἀρχαιοτ. (.) ὑγγειον', 'Ἀρχαιολογικὰ ἄναλεκτα τῆς Αθηνῶν' 21, 1988, 158-162 (I am grateful to Marios Blelas for bringing this article to my attention). In fact, I now think that *siphōn* need not necessarily have to mean 'pump': it might equally refer to the container and tube, on analogy with this sort of flask, while the term *streptōn* would mean, as originally suggested, the swivel nozzle by which the fire could be directed (as ANNA COMNENA, *Alexiad*, ed. B. Leib, Paris 1943, xi, x.2, emphasises). The original interpretation could thus be maintained without having to make a strong argument for *siphōn* as 'pump'.

143. *Naumachica*, 1, 6 (= 6, 5).

This is placed in a bronze container on a hearth or furnace at the bow of the ship (*in prima fronte navis facta fornace illi insidunt vas eneum his plenum subposito igne*), and is projected at the enemy by one of the crew squirting it through a bronze or copper tube (*et unus eorum fistula facta aerea... in hostem spargunt*).¹⁴⁴

The interpretation of *siphōn* as a projected pot also ignores the pictorial evidence which, however stylised and unrealistic, nevertheless is based upon the notion that fire was projected from a tube, and not as a missile (*Cod. Scyl. Matritensis* vitr. 26-2, f. 34v.b [11th c.]; and *Cod. Vat. graec. 1605*, f. 185, C1 [11th c.]).¹⁴⁵ It needs also to be emphasised that in most of the texts in which liquid fire is mentioned as an element in the armament of ships, the possibility of launching pots or containets filled with inflammables is mentioned *in addition to* either or both the regular *siphones* mounted on the ships and the 'newly-invented' *cheirosiphones* (see, e.g., *Naumachica* 1.62; 64; 65; 6.58; 60).

Given the several possible meanings attributable to the word *siphōn*, and given the specification of one variety as a *cheirosiphōn*, thus clearly differentiating it from the other type, it is possible that these hand-*siphones* were indeed hand-thrown pots or 'grenades', distinct from the fixed-position projectors mounted on the warships. But the problem then remains as to why such projectiles, which had existed for centuries, were referred to as 'recently devised' or 'prepared'? The question of the actual form of projection of 'liquid fire' as a whole is thus far from resolved.

672.3-4 γονάτια ἀκόντια μετὰ βουκολίων μ': an entirely obscure phrase, following on from the 60 *siphónia*, 3 for each *dromón*, to be supplied by the imperial *vestiarion*, and before the list of spare sails. The fact that there are 40 altogether makes it possible that they are to be associated with the 20 *siphones*, one at the bow of each of the warships. What they were is quite unclear. *Gonatia* might by derivation from its standard meaning of something knotted or jointed, a knee, etc., refer to angled brackets;¹⁴⁶ they were apparently sharp or pointed (*akontia*), and fitted with or associated with *boukolia*, a word deriving from Lat. *bucculum*, a side-piece, cheek-piece on a helmet, or a boss/embossment or buckle (on a shield, for example). Βούκα, Lat. *bucca* (later Venetian *boca*) came to mean a hatch or hatchway, and thus *boukolia* might bear a similar interpretation here — a cover or covering-piece.¹⁴⁷ *Gonatia* are associated

144. R.J. FORBES, *More studies in early petroleum history*, Leiden 1959, 83; B. BISCHOFF, 'Anecdota Carolina', in *Studien zur lateinischen Dichtung des Mittelalters. Ehrengabe für Karl Streeker*, W. Stach, H. Walther eds., Schriftenreihe zur Historischen Vierteljahrsschrift. Zeitschrift für Geschichtswissenschaft und für lateinische Philologie des Mittelalters 1, Dresden 1931, 6-7. I am greatly indebted to John Pryor for obtaining the details of the text and its provenance from the Wolfenbüttel archive, and for generously passing them on to me. He will be dealing also with this text in more detail in his forthcoming joint monograph on the *dromón*, with Elizabeth Jeffreys.

145. Reproduced in PASZIORITY, 'Über das "Griechische Feuer". Die Analyse eines spätantiken Waffensystems', *Antike Welt* 17, 1968, 27-37, at 31; cf. J.F. HALDON, M. BYRN, 'A possible solution to the problem of Greek Fire', *BZ* 70, 1977, 91-99, at 5 n. 12.

146. Cf. DIMITRAKOS, s.v. for various meanings. In later medieval Greek the word could refer to knee-pieces in armour: cf. KRIARIS IV, 348-349. Also JEFFREYS, PRYOR, *Dromon*.

147. Dt. CANGI 215; *Strat.* xi B, 16.25; 35; 37. Several possibilities exist: in modern Chiot dialect *boukla* can mean a ring or hook for attaching the ox-harness to the plough shaft (PASPADES, Λιαζον γλωσσαριον, 111, s.v. βούκλα); in Samos it refers to a buckle, eye-bolt or clamp (M.P. ZAPHEIRIOS, *To γλωσσικό ιδιωμα τῆς Σαμον*, Athens 1995, 366). See KRIARIS IV, 162: βούκλα (3).

later in this document with the *manikellia*, or oar-sleeves for the lower level of 50 oars, the ancient *askómata* (672.5-6), where the term may have a slightly different meaning. It is tempting to interpret the 40 γονάτια ἀκόντια μετὰ βουκολίων as some sort of shield or cover for the liquid fire projectors at the bow. Note that one text specifies that the *siphones* are encased or bound in bronze, and this may possibly refer to shields around the device as much as to the device itself.¹⁴⁸

672.7 χαλκίστια κ' μετὰ καὶ τὰ λοιπὰ μάγγανα: χαλκίστιον probably derives from χαρχήσιον >aG *χαρχήσιον*, mLat *calcese*, masthead or masthead block, and also in technical literature or lists of ancient artillery bearing the meaning of 'joint' or 'universal joint', with metathesis of κ and χ reinforced by the fact that a major element in the medieval device may have been of bronze.¹⁴⁹ In Byzantine and later Greek the term refers to both a block/pulley, as well as to the device of which it formed the key component, such as an onboard derrick for unloading ships.¹⁵⁰ As noted already, *magganon* was a generic term for blocks/pulley-wheels and their fittings. In this case the *chalkisia* will probably have been the masthead blocks for the yard on the larger mast, probably the foremast of each *dromôn*.

672.7-8 μαξιλάρια μ': normally 'cushions'; but in this context possibly 'fenders' for the bow or bow and stern of each vessel (2 each).

672.8 περόνια κ'. καταπρόσωπα σὸν τῶν κατακοράκων αὐτῶν: this can be taken as a single item, or as two separate items. In the second case — which is the form in which the Ms. has transmitted the information — 20 *peronia* are listed, followed by an unspecified number of *kataprosopa* with their *katakorakes*. In the second case, *kataprosopa* can be taken arributively (thus 20 *peronia* on or for the *prosopa*, with their *katakorakes* (and the latter can itself be understood as something for the *korakes*). Interpreting these terms offers a number of problems and possibilities.¹⁵¹

katakorax: according to a later tenth-century anonymous treatise on naval warfare (written for Basil the *parakoimómenos*: see Brokaar, 'Basil Lacapenus', 214f.) the *korakion* was equivalent to the ancient term *dryochion*, and referred to a stringer or long beam (*Naumachica* 5, 2.1; although in aG the word referred usually to a supporting beam, the stocks on which ships' hulls were constructed, and later the ribs of the hull: see LSJ s.v. δρύοχος). In mG the *koraki* is the stempost. A *katakorax* might thus be a fitting for or upon a *korakion*, a beam or timber and, more particularly, on the stempost.

148. See KOUKOULES, *BBP* 5, 348. This is the suggestion of John Pryor, to whom I am grateful for discussion.

149. See KAHANI, 'Sprache', col. 417. For the meaning of universal joint (in the support for artillery pieces) see MARSDEN, *Greek and Roman Artillery*, 15-16, 118.

150. See *De obsidione toleranda*, 225 (p. 82) (an account taken from POLYBIUS, *Historiae*, viii, 5.9) of a crane-like machine used to drop weights into Roman ships attacking the sea-walls of Syracuse, in which the *karchēstion* or pulley plays a key role. See also DINI FRAKOS, s.v. *χαρχησιον* (5) for the mG meaning derrick/crane. Cf. HIRON, *Belopoeia*, 88; ANONYMOUS, *Poliorkétika*, ed. Wescher, 271.2. The word may be at the origin of the medieval Italian terms *calzensis/calcer*, a mast-block: see PRYOR, 'Naval architecture', 267; and J.H. PRYOR, 'The galleys of Charles I of Anjou King of Sicily: ca. 1269-84', *Studies in Medieval and Renaissance History* 14, 1993, 35-103, at 73f. with fig. 5.

151. For a more detailed discussion, see JEFFREYS, PRYOR, *Dromon*.

Equally, however, there remains the possibility that the *katakorax* (which can be understood to mean 'for the *korax*, or raven') was a device similar to the Roman *corvus*, the 'raven', a boarding-plank fitted with a spur or hook which, when released, fell onto the timbers of the enemy vessel and acted at the same time as a rigid grappling device. A third meaning occurs in ancient treatises on artillery: *korax* refers to the claw-shaped bolt which engages with the ratchets of the spanning-mechanism on a ballista.¹⁵²

kataprosôpa might refer to something associated with the bows of a vessel, or the face or front of something: *kata prosôpon* meant simply 'in front' (see, e.g., *Naumachica* 4, 9.26).

peronion (or *peronê*) has many possible meanings: a pin or needle, a fork, clasp or hook, a lynch-pin or retaining bolt (for example, to prevent a wheel sliding from the axle), a tool for twisting yarn or hemp, and so on (see LSJ and Demetrikos, s.v.)¹⁵³. It is the ancestor of mLat *sperona*, Fr. *éperon*, a spur.¹⁵⁴ In this context, therefore, and since medieval warships appear no longer to have had rams below the waterline, but a beak above it (see Pryor, *Geography, Technology, and War*, 58f. with literature; and esp. F.H. van Doorninck, 'Did tenth-century dromons have a waterline ram? Another look at Leo, *Tactica* XIX.69', *Mariner's Mirror* 79 [1993] 387–392) the term might refer either to the beak — the 'spur' of the warship — which protruded above the waterline and was fitted onto the stempost (thus being described as 'at the front' — *kataprosôpa* — and 'attached to the stempost' — *katakarakion*); or to the spur or hook of a boarding-plank — *korakion* — attached by unspecified fittings at the bows — *kataprosôpa* — of the ship. Equally, of course, it may refer to a large bolt or lynch-pin.

To bring these items together meaningfully remains problematic, but — assuming that this range exhausts the possible meanings for the terms, which is by no means certain — there seem to be three possibilities:

in the first case, the list refers to 20 bow hooks or spurs (*peronia kataprosôpa*) with the fittings by which they were attached to the stempost (*katakarakes*). Against this is the fact that, whereas *peronion* is not attested in this meaning elsewhere, it does occur with the meaning bolt or lynch-pin in an almost contemporary account (albeit based on a second-century archetype) of artillery construction;

in the second, it refers to the various parts for a *corvus*-like boarding bridge: the how-fittings and their 'ravens' of which these *peronia* were a component, the bolt by which the beam was secured to the bow of the warship, perhaps. Against this, however, is the fact that it might seem odd to emphasise a single bolt in the list in such a way (the text lists 20 *peronia*, so that each *dromôn* can be assumed to have possessed one); and there is no direct evidence, in any case, that this was a tactic employed at this period (although the texts do assume that on occasion the enemy might attempt to board across the beak of the vessel);¹⁵⁵

152. See HERON, *Belopoeica*, 79.

153. For its meaning as bolt or lynch-pin, see HERON, *Belopoeica*, 83; APOLLODORUS, *Poliorkêtika*, ed. WESCHER, 157.2; 176.16–17; ANONYMOUS, *Poliorkêtika*, 229.8 (and cf. the Index in the Schneider edn., 102, s.v.).

154. See J.-F. NIEMEYER, *Medae Latinitatis Lexicon Minus*. Leiden 1976, 985.

155. E.g. *Naumachica*, 1. 6 (= 6, 5).

in the third case, the items are to be taken separately, not together: 20 *peronia* or bolts/lynch-pins of uncertain function; 'facings' (*kataprosôpa* — unspecified) with their attachmenrs for the stempost (*katakorakes*). Given that 130 *peronai* for the *chelandia* and 12 large iron *peronia* for the *xylokastron* are specified as exrra supplies provided by the *vestiarion* (676.20; 677.1-2; and note that both forms — *peronê* and *peronian* — are used: it is unclear whether there is a semantic difference), this 'neutral' solution may seem safer. The *peronia* for the *xylokastron* can certainly be understood as bolts or pins to secure the structure in some way. But on the whole, the suggestion of Jeffreys and Pryor is probably the nearest to a satisfactory solution, since it takes into account also changes in ship-construction, the visual representation of warships, and the archaeological evidence. These *peronia* are thus the spurs of the warships, slung from the bows and employed to ride up over the oars of an enemy vessel and turn it over.

672.9 σίδηρα βολιστικά anchors and σιδηροβόλια anchor chains¹⁵⁶

Cf. *Naumachica* 1, 8; 6.7 (τὰς ἀγχύρας... ἥγουν τὰ σιδηρα...); and cf. 677.7-8: σχονία σιδηρόβολαι: anchor cables.

672.9-10 ἀναγωκατάγοντα σὺν τῷν ἴμονταρίῳν αὐτῷν κ': 20 'up-and-down haulers' with their halyards. There was clearly meant to be one for each vessel. Does this refer to the block-and-tackle associated with the main yard, or a windlass of some sort?¹⁵⁷

672.10 περιπετόμενα ἀνὰ κδ', ὅμοιν υπ': 24 *peripetomena*: a type of boarding or mooring grapnel, or a hanging/awning? There are several possibilities: grapnel or mooring cable (cf. περιπέπτω, one of the meanings of which is 'to fall in with/meet/fall foul of', used of ships); awnings or similar covers (cf. περιπετάννυμι, 'spread/stretch around').

673.8 τετράκοντα εἰς τὰ σιφώνια ρ': four-legged (i.e. *tetrakôla*) grates or bases for the *siphônia*? See Reiske, II, 795-796; and Haldon, Byrne, *art. cit.* (n. 96), 93-95 (perhaps either for the hearth upon which the brazier rested, or to act as a base for the tube or *siphôn*).

673.9 σκαλοδέματα: *skala*, a ladder, later a wharf, landing-stage, quay;¹⁵⁸ and *dema*, a binding, band, or cord.¹⁵⁹ Here, mooring cables seem the most likely meaning, since the entry occurs in a list of general stores required by the fleet.

156. See KOUKOLIUS, *BBP* 5, 358-359.

157. See DIMEFRAKOS, s.v., who suggests some sort of water-drawing machine, although cites only this reference in support. For the halyards, *mantaria*, see KAIIANE, TIEPAI, *Lingua Franca in the Levant*, 544. For windlasses and winches in the ancient and medieval world, see A.G. DRACHMANN, 'A note on ancient cranes', in C. Singer, E.J. Holmyard, A.R. Hall, T.I. Williams, *A History of Technology*, II: *The Mediterranean Civilizations and the Middle Ages c. 700 B.C. to c. A.D. 1500*, Oxford 1956, 630f., 658-662.

158. Cf. *Naumachica*, 6, 28: 30: σκαλώνω, σκάλωμα, to approach / moor at a quay or *skala*; the act of approaching/mooring (= ὄρμω, ὄρμησις cf. *ibid.*, 1, 30; 32).

159. KRIARAN V, 9-10. JEFFREYS, PRYOR, *Dromon*, suggest 'rope ladder'. But here one would expect a standard term such as *whornoklimaka* or *anemoskala* or some such.

674.7-8 ὑπέρ ἀγορᾶς τῶν πανίων τῶν ῥασιακῶν: canvas (rough-woven cloth) sails.¹⁶⁰

674.20-21 (σχοινία) λόγῳ κρυπτῶν ἐπικήρων καὶ ποδιοδρόμων τῶν αὐτῶν τα' ἀρμένων: two terms connected with cordage and sails. Sails normally had a rope sewn in around their outer edge, known in more recent terminology as the boltrope (Fr. *ralingue de chute*). The *podiodromos* was presumably that section of the boltrope called the foortrope, sewn along the foot of the sail (known as the *podion*). Alternatively, since *dromos* has the implication of movement, i.e. running rigging, it may refer to ropes used for tacks (Fr. *point d'amure*: the lower forward corner of a fore-and-aft sail) and sheets (Fr. *écoute*: a rope attached to the after lower corner of a fore-and-aft sail, employed in extending the sail or altering its direction. In medieval Italian maritime parlance the term *pozia* referred to a sheet).¹⁶¹

What exactly is meant by *krypta epikēra* is unclear: *epikēra* is to *apokēra* as *epikērōnō* is to *apokērōnō*, to fill up (or empty).¹⁶² It may refer, therefore, to a halyard used to 'fill up', i.e. hoist, a sail. Equally, of course, the term might derive from 'waxen', implying waxed ropes. *Krypta* means concealed: possibly this term refers to the waxed boltropes sewn in along the edges of the sails. But this is pure guesswork.

677.6-7 παραδράκτια χαλκᾶ: cf. *drakton* < *drax/drama* (a handful, a small container). A *paradraktion* would thus be a cup or vessel, or a part thereof. Perhaps here it refers to parts for a block-and-pulley system? (cf. δράσσομαι, seize, lay hold of).¹⁶³

677.7 ἀναγοντιτέα χαλκᾶ: *anagō* has the sense of raise or draw up; *itea* means a willow, and by derivation a wicker shield. Presumably connected with the *paradraktia*. They are associated in this list with *peripetomena* and anchor cables, just as in the list above at 672.9-10 *peripetomena* are listed alongside anchor chains, anchors, and the *anagokatagona* with their halyards. Are these all elements of a windlass-system for the vessels?

677.9 χουθάρια: mG clew or ball, thread/rope coiled round. The later diminutive means a spindle. Perhaps here the term refers to cleats or pins around which ropes could be stored or secured. But this is again guesswork.¹⁶⁴

There are many other phrases or terms which need clarification or at least justification from the perspective of their translation; but this list and associated discussion should give some idea of the highly-specialised nature of the technical vocabulary employed.

160. On rough cloths see *Three Treatises*, 197; KAHANI, 'Sprache', 385. The material from which the sails were made is not specified. Canvas (mG *kannabatos* >aG *kannabis/kannabinos*) is woven from hemp, but flax and other yarns can also be used. On sails in general, see KOUKOULEN, *BPP* 5, 355-356; and for flax, see ODB 1231, 'linen', and 2028-2029, 'textiles'.

161. See KAHANI, 'Sprache', col. 363; DEMETRAKOS, s.v. *podia* (4); and for *pozia*, see PRYOR, 'Naval architecture', 267.

162. KRIARAS III, 217.

163. Note that the verb δράω/δράσσομαι is used of the siege-hooks, or ὕπαγμι, suspended over the walls and used to seize the rams of the attackers: cf. KLEI MENO, *Strat.*, §79.

164. Cf. DI CANGI 723; KRIARAS VIII, 311; LAMPE, s.v. *χουθάρι(o)n*.

6. Resources, planning and logistics

The documents under examination provide a wealth of information on the ways in which the Byzantine state facilitated military operations of the sort recorded here. Attached to *document I* is a series of notes recording particular aspects of this process for the expedition of 911. Similarly, the document for 949 includes a long list of detailed requirements for the fitting out and arming of the naval forces of the imperial fleet. I have dealt elsewhere with the organisation of a field expedition, but will survey briefly aspects of the imperial administrative response raised specifically by these documents.

The first set of notes, which seems to fall into two sections, provides information on several key features of the preparations. From 656.18 - 658.8 the information is introduced by the phrase *isteon oti*, and is in the format of information extracted probably from a longer list, whereas from 658.8, the style changes to *peri tou*, and seems to reflect summaries of longer items from other documents, taken from detailed accounts, and introduced by the statement: '[the next bit is] concerning the...'. The first section deals with the production of arrows, heavy infantry spears (*menaulia*), and the recruitment of additional soldiers from particular areas of the empire, as well as details of the intelligence-gathering procedures inaugurated — in accordance with long-standing tradition as well as practical experience — at the beginning of the campaign year.¹⁶⁵

It also includes information about the recruitment and equipping of a body of 500 soldiers from the *Platiniatai*. The terms in which the account is expressed suggest that these are men who are already registered and in receipt of a *roga* from the imperial government. Yet it is not known what proportion of them can ride, for example, nor what the state of their equipment is. Those who are up-to-date in respect of their pay should equip themselves; those who are not should be equipped by compulsory purchase in the theme or from the imperial *mētata*.¹⁶⁶ It is probable that these soldiers

165. i: the *stratēgos* of Kibyrrhaiotai and the *katepanō* of Mardaites of Attalia undertook to raise respectively 2 *chelandia* from the *ousias* of the *toumarchai*, and *galatai* which should be sent in March to Syria to report on the situation and preparations there (657.1-7); and ii: the *prōtospatharios* Leo Symbatikes, the *archōn* of Cyprus (the imperial officer responsible for the Byzantine jurisdiction on Cyprus, which was jointly occupied: see OIKONOMIDES, *Listes*, 353f.) should send scouts to the gulf of Tarsos and to the Stomia, as well as to Tripolis and Laodikeia, to find out if the Saracens are planning anything (657.7-12) (on these locations, see *TIB* 5, n.n.). Compare the advice and description of similar intelligence-gathering activities in *Three Treatises*, [B] 3-33.

The production of arrows and spears: iii: the *stratēgos* of Thessaloniki undertook to have 200,000 arrows made and 3,000 *menaulia* and shields, as many as is possible (657.12-14); iv: the *kritēs* of Hellas undertook to produce 1,000 *menaulia*, which he completed; he also undertook to produce others and to deliver them to wherever he should receive orders (657.14-17); v: the *archōn* of Chripos (Evripis) in the theme of Hellas undertook to produce 200,000 arrows and 3,000 *menaulia* (657.17-19) (for the straits of Evripis, between the mainland and Euboea, see *Greece, I: Physical Geography, History, Administration and Peoples*, Naval Intelligence Division, Geographical Handbook Series, B.R. 516, London 1944, 62ff.; for the town/port, with its customs officers, see J. KÖDÉR, F. HILL, *TIB* 1, Vienna 1976, 62 and n. 148: 156-157). That it was an important fortified port is suggested by its being the object of a major seaborne attack from Tarsos during the reign of Basil I: see TII, CONI, (*Vita Bas. imp.*), 298; vi: likewise the *stratēgos* of Nikopolis and the *stratēgos* of the Peloponnese (657.19-20) [total arrows: 800,000; total *menaulia*: 13,000].

166. 657.20 - 658.8. The officer charged with this task, the *prōtospatharios* Theodore Pagkrates, was probably connected with a Georgian family, possibly the Bagratid clan itself: see *De adm. imp.* §43.44-45, 150 and comm. 163, 165; also OIKONOMIDES, *Listes*, 356 and n. 382.

were organised tactically as a single body; but it is equally clear that the proportion of cavalry to infantry remained unclear until the actual mustering, suggesting that estimates of the numbers of infantry and cavalry in each *thema* must have been highly notional until the soldiers were called up. This is a good example of the method of selecting appropriate troops according to need as outlined in Leo's *Tactica*, discussed above.

The next section deals with a miscellaneous collection of information: foodstuffs and other provisions, including wine,¹⁶⁷ from the *themata* of Thrakesion (dealt with by its *prōtonotarios*), Anatolikon and Kibyrrhaiotai (dealt with by a specially appointed *basilikos* to co-ordinate the raising of the materials from both regions);¹⁶⁸ as well as a variety of items connected with the fitting-out of ships — nails and ironwork. In addition, an official with his staff was appointed to conscript oarsmen for the small boats — *sandalia* — attached to each *dromōn*, and he was also to ensure that each such boat had the correct sailing equipment (mast, yard, oars etc.).¹⁶⁹ These crews were

167. The [*archón* of] Limnogalaktos (in the Thrakesion region) was to co-operate with the *prōtonotarios* of Thrakesion in arranging for the delivery of 30,000 measures of wine: 658.16-17. In general on the diet of Byzantine troops and the ratio of grain to meat, vegetables, fish etc. see esp. DWYER, 'Roman Military Diet'; KOHL, 'Eßgewohnheiten'. On wine measures and their transport: *Three Treatises*, [C] 141 and comm., 202; [C] 599-604 and comm., 254; for measures: see SCHUBACH, *Metrologie*, 112-115; and for types of wine, see TH. WEBER, 'Essen und Trinken im Konstantinopel des 10. Jahrhunderts nach den Berichten Luitprands von Cremona', in *Luitprand von Cremona in Konstantinopel*, J. Koder, Th. Weber eds., *Byzantina Vindobonensis* XIII, Vienna 1980, 71-99, at 76ff. Limnogalaktos may well be the name of an imperial *kouratōreia* from which wine was obtained. See W. TOMARCHIK, *Zur historischen Topographie von Kleinasiens im Mittelalter*, Sitzungsber. d. konigl. Akad. d. Wiss., 124, Vienna 1891, 37. Limnogalaktos is also the name of a *stratēgos* of Laggobardia in 940 (cf. FALKENHAIN, *Untersuchungen*, 79 [a reference in the *Chronicon* of Lupus protospatharini]).

168. From Thrakesion: 20,000 *modioi* of barley; 40,000 *modioi* of wheat; *paxamation* (biscuit); flour; 30,000 measures of wine; 10,000 animals for slaughter (*ophakta*); 10,000 (units) of *linaron* for the *propyra* and caulking; 6,000 nails (658.8-14). From Anatolikon and Kibyrrhaiotai: 20,000 *modioi* of barley; biscuit and corn; 60,000 *modioi* of flour (659.7-12).

169. The *katepano* (of Attaleia) was to liaise with him in this: he was to receive a *prōtokagkellarios* and staff. 4 sailors for each *sandalion* from the Korphitanoi of Herakleia were to be taken. In addition, 6 eight-oared fishing boats were to be prepared (659.14 - 660.1). The Herakleia in question is most probably Herakleia at the head of the Gulf of Latmos, now on the shores of L. Bafra due to the complete silting up of the Gulf. The settlement is located within easy reach of Samos and the main expeditionary port of Phygela just to the north. Korphitanoi may derive from **Koryphitanoi* i.e. those at the head — *koryphé* — of the Gulf (cf. the formation of the name Hierakoryphē, a fortress, presumably on a prominence called Hierax, near Attaleia: NIKIAS CHONATES, Bonn, 340; KINNAMON, Bonn, 7; RAVEN, *Historical Geography*, 420). Soustal and Koder, following AHRWEILER, *Mer*, suggest that this is Herakleia on Kephallenia, and that these *Korphitanoi* are from Kerkyra (Corfu - Kor[yl]phor: see TIB 3, 55). This seems to me most unlikely. First, why would a unit in Kerkyra be raised through the activities of the *katepano* of the Mardautes of Attaleia, an associate of the *stratēgos* of the Kibyrrhaiot *thema*? — the distance between the two regions, both in strategic as well as administrative terms, makes this extremely unlikely. Ahrweiler thinks that these *Korphitanoi* were a naval unit; but the text suggests merely that they were seamen, perhaps fisherfolk, who could be conscripted for particular maritime duties when the need arose. Second, the despatch of a clerical-administrative unit, including a *prōtokagkellarios* and his retinue, to supervise their conscription and registration, makes this a more probable explanation. Finally, the route which the expedition took — if that is indeed what the *stadiodromikon* at the end of the 949 document represents (678.1-22) — took it directly past Samos, at which point no doubt the supplies and possibly the soldiers from the Thrakesion region and central Asia Minor joined the imperial contingents. It would make much greater sense that the Herakleia in question was that on the Gulf of Latmos than any other (especially in view of the small size of the vessels concerned).

presumably a special-category population, exempted — *exkoussatoi* — from certain general state obligations and *aggareia* on account of their particular service to the state. A similar group, the fishermen of Tembres near Dorylaion, were employed to accompany the imperial baggage-train on expeditions where the emperor was present and maintain the supply of fresh-water fish from rivers and lakes en route.¹⁷⁰ In the case of the provisions, it is interesting to note that the state had to arrange for transportation to the appropriate ports — Phygeia¹⁷¹ in the case of the Thrakesion theme, Attalia¹⁷² for the Kibyrrhaiotai. This must have involved considerable expenditure, and will have been accomplished through the exploitation of both the imperial postal system, the *dromos*, with its draught- and pack-animals and way-stations, and the compulsory levying of pack-animals and drivers from the population. The naval materials were to be provided by the *strategos* of Samos (who was to receive the necessary cash from his *prōtonotarios*) and the *prōtonotarios* of the Kibyrrhaiotai.¹⁷³ The materials for the ship-building or servicing work was to be delivered to Phygeia, and we may assume that the port had the facilities for this sort of work. Much will have depended upon the availability of timber; and we learn from the documents for the 949 expedition that this was provided by a regular yearly process — reference to cutting the wood for the 8th year of an indictional cycle is made, for example, for which purpose crews were detailed by both the *strategos* of Aigaion Pelagos and that of the Kibyrrhaiotai.¹⁷⁴ Finally, the notes include a reference to the need to look into what had become of materials which had been provided by the imperial *kōtōn* the previous year (probably as part of the requirements for Himetios' expedition against Syria);¹⁷⁵ the order to the *strategos* of the Kibyrrhaiotai, the *katepanō* of the Mardaites of Attalia and Leo Symbatikes (military governor of the Roman parts of Cyprus) to carry out surveillance of the Arabs of the Syrian ports is repeated;¹⁷⁶ and the *parathalassitēs* was ordered to equip 1,200 soldiers by *syndosis*, that is to say, through joint contributions from those subject to the *strateia*.¹⁷⁷

170. *Three Treatises*, [C] 554-555, and comm. 252 (see also 255).

171. Modern Kuşadası see *Turkey*, I. Naval Intelligence Division, Geographical Handbook Series, B.R. 507, London 1942, 83f.; II, 88; and C. FOSS, *Ephesus after Antiquity*, Cambridge 1979, 123f.; CHRISTIDES, *Conquest of Crete*, 222-223. RAMSAY, *Historical Geography*, 111, locates it further to the north.

172. Modern Antalya: see ODB 228f.; *Turkey*, I (Naval Intelligence Division), 147f.; II, 91-93; RAMSAY, *Historical Geography*, 420.

173. 30,000 5-dactyl nails; 3,000 (jointed) claw-nails; 3,000 1 *sphamē* nails; 4,000 6-dactyl nails and 4,000 5-dactyl nails; a further 4,000 4-dactyl nails (658.17 - 669.7); 60,000 small nails from the Kibyrrhaiotai.

174. 665.1-2; 10-11. See A. DUNN, 'The Exploitation and Control of Woodland and Scrubland in the Byzantine World', BMGS 16, 1992, 235-298; see esp. 262-272. For shipbuilding in other coastal regions of the empire, see, for example, TIB 5/1, 115; and K. BIEHL, TIB 9, Vienna 1996, 139f., 147. For a detailed discussion of naval dockyards and administration, see AHRWEILER, *Mer*, 419-439.

175. The *kōtōnēs* Theodoretos was the official responsible (660.1-5).

176. 660.7-12; cf. 657.7-12.

177. 660.7-12. Since no specific regional epithet is given, it is reasonable to suppose that this *parathalassitēs* is the Constantinopolitan official of the same title in the bureau of the eparch of the City, apparently with responsibility for merchant shipping and crews in the harbours and landing-places in and around the capital (see OIKONOMIDES, *Lists*, 321 and n. 195 with literature). But other ports might also have such an officer: see, e.g., that for Panormos, noted by AHRWEILER, *Mer*, 101 n. 6. Here, the *parathalassitēs* is given responsibility for raising and equipping a substantial number of soldiers (1,200). On *syndosis*, see HALDON, 'Recruitment and Conscription', 49ff., 59f.; ID., 'Military Service', 26, 28.

If the assumption made above is correct, that the reference to the materials from 'last year' which were to be checked refers to the expedition of 910, this tells us something very important about the speed with which such expeditions could be executed. For it is clear that one of the priorities was the construction, or at least the servicing of ships — the list of appropriate equipment at 658.17-659.7 is explicit.¹⁷⁸ But this means that the expedition of 911 was still in the planning stage, although fairly advanced, in the first months of 911, and that the work of mobilising and recruiting the troops, their supplies, and the ships needed to carry them to Crete could be completed within some six months. This says a great deal about the efficiency and effectiveness of the imperial fiscal and military administrative structure, and strongly suggests that, in spite of the cost which the historians of the period emphasise, such expeditions could indeed be organised and fitted out fairly rapidly.

The documents for the expeditions of 935 and 949 tell us nothing about provisions and supplies; but again it is clear that the government went to considerable efforts to secure its operations by intelligence-gathering operations and having a number of smaller squadrons stationed strategically to guard against surprise or unforeseen enemy activity.¹⁷⁹ They also include a mass of detail on other items taken with, or needed for, the expeditionary forces. Apart from payments made to the troops in cash or other forms (see below), the leaders of the armies were given various items of valuable cloths and clothing.

The administrative framework through which the state extracted and redistributed resources for military undertakings is fairly clear for this period. The information given here supplements and adds nuance to it. We learn some details of the process by which large numbers of weapons and armaments were produced, through the conscription of the skills of provincial craftsmen of various specialisms.¹⁸⁰ We learn in addition that a total of some 40,000 *modioi* of barley and 100,000 *modioi* of wheat, flour and biscuit was to be collected, as well as 10,000 head of livestock for slaughter. Based on figures given in other documents of the same period, it is possible to make some rough calculations as to the value of these supplies in respect of the number of animals needed to transport them, the number of men and horses they might be expected to support, and the length of time they would last.¹⁸¹ Pack-animals were officially supposed to carry up to 10 *modioi* in weight each of barley or grain;¹⁸² thus at least 10,000 pack-animals or their equivalent in cartage or repeated journeys would be needed to transport even a portion of this material. Pack-animals need fodder and water too, of course, so the soldiers' and cavalry mounts' shares of the loads would be further reduced over any distance.¹⁸³ By sea, this material could be moved in bulk, and much more cheaply and rapidly; and it is to be assumed that the provisions were moved by sea from the nearest coastal point of embarkation, rather than marched overland any distance. Because of the requirements of the campaign, the supplies from the Anatolikon region were to be

178. See the discussion in section (5) above on some of the technical vocabulary in the lists.

179. See *Three Treatises*, [B] 18ff. with discussion, pp. 46f.; and VAN DER VEN, *Byzance et les Arabes*, ii, 1, 333-334.

180. Dealt with in detail in HALDON, 'Organisation and Support'.

181. See HALDON, 'Organisation and Support', esp. 124-126.

182. *Three Treatises*, [C] 552-3 and comm., 251f.

183. See HALDON, 'Organisation and Support', 127-131.

taken down to Attalia rather than — as may have normally been the case — to Kalon Oros/Korakesion, on the eastern shore of the Gulf of Attalia, a traditional centre of such activity.¹⁸⁴ The 100,000 *modioi* of wheat, flour and biscuit¹⁸⁵ cannot unfortunately be broken down into its constituent parts,¹⁸⁶ but will presumably have been intended to supply the fleet and army only as far as its first landfall.

This information provides us with insights into both the magnitude of the operations in respect of supplying and equipping the soldiers, as well as of raising the troops. The general structures of supplying and maintaining field forces on campaign are fairly clear, even if we still lack information about some of the minuter details; and I will not repeat what has been said elsewhere in greater detail. But the degree of co-operation required between the different departments of the state's fiscal administration was clearly considerable. Three main bureaux were involved, and I will briefly note the competence and range of their involvement in what follows.

a. The *eidikon*. As we have seen, it was in particular the job of the thematic *prōtonotarioi*¹⁸⁷ to liaise with these bureaux to ensure that the relevant materials and provisions were delivered. Officials of the *eidikon* were responsible for a range of materials, which were kept in the depot of the department, presumably in Constantinople, although provincial storehouses may also have been maintained. Money for the purchase of a wide range of ready-made items, including sails, and of raw materials, was drawn from the treasury of the *eidikon*.¹⁸⁸ The *eidikon* was also apparently responsible for the resources raised through the *synôné*, that part of the regular tax-assessment in each province collected in kind to support the army, and the *epi tou eidikou* worked with the thematic *prōtonotarioi* to assess the resources owed by the tax-payers to the state or vice-versa, in the event of the army requiring more resources than would normally be available in a given year. In the treatises on imperial expeditions compiled during the reigns of Leo VI and Constantine VII, the thematic *prōtonotarios* is informed in advance of the army's requirements, which are to be provided from the *synôné* and the *aerikon* of the *thema* and stored at along the route of march. An exact account of the supplies is to be kept, so that if the tax-payers provide more than their yearly assessment demands, the amount can be set against the assessment for the following year. Where supplies cannot be paid for out of the thematic revenues, the cash is to be taken from the bureau of the *eidikon*, just as in the sixth

184. See 659.10-12. Kalon Oros is modern Alanya: see *Turkey*, I (Naval Intelligence Division), 97-98; and HADDON, *Studies*, 50 for later Latin accounts.

185. On biscuit, see KOHL, 'Eßgewohnheiten', 197-199.

186. For some calculations in respect of these supplies, see below, section (7) 'Bread for the army'.

187. The *prōtonotarioi* were officials of the department of the *sakellion*, the general fiscal inspectorate; see KLET PHIL, 121.6; OIKONOMIDES, *Listes*, 315. For their origins, see HADDON, *Byzantium in the Seventh Century*, 202-205 with older literature.

188. See the list at 671.6-19, which included both raw materials such as wax, tin, lead and copper; as well as silken cordage, sheets of leather and felt, and prepared goods such as sails, metal plates, caltrops or grapnels, axe- and mace-heads, and so forth. A second list of items and materials is given at 673.12 - 676.17, for which a sum of 624 lbs. gold was set aside, of which 621 lbs. 57 *nn.* and 6 *miliarésia* were spent; and a third, shorter list of clothing and footwear, detailing items issued by the *eidikon* to the *drouggarios* of the fleet, appears at 677.18 - 678.10.

century the cash was taken from the general bank of the prefecture in similar cases. The final accounts are worked out in the *eidakon*, so that the assessment for the following year for each *thema* so affected could be correctly adjusted.¹⁸⁹ One of the implications of this is that the task of assessing and collecting the *synôné* was the responsibility of the *eidakon* rather than the *genikon logothesion*, which had otherwise inherited the major provincial tax-assessing functions of the general bank of the praetorian prefecture of the late Roman period.¹⁹⁰ In the passage from the treatise on imperial expeditions in question, which is concerned specifically with the supply of fodder for the imperial baggage train, it is the *chartularios* of the stable who, together with the thematic *protônotarios*, completes the calculations in the department of the *eidakon*. In the case of soldiers, it will have been the *chartularios* of each theme army who will have been involved, an official seconded to the staff of each *stratégos* or equivalent commander-in-chief from the military accounts department at Constantinople, the *stratiôtikon logothesion*.¹⁹¹ It is significant that, among the chief officers accompanying each *stratégos* in the expedition of 949, the *chartularioi* and certain members of their staff figure prominently as the only purely administrative officials present.¹⁹²

b. The *koitôn*. Originally a sub-department of the *sacrum cubiculum*, the *koitôn* was the imperial bedchamber staff under the *parakoimômenos*. According to the treatise on imperial expeditions, there were twelve *koitônitaï* in attendance on the emperor. But the *koitôn* also functioned by the later ninth century as an imperial reserve treasury, from which coined gold and silver were issued for imperial largesses to certain guards regiments or other units.¹⁹³ Its sources of income varied, but included extraordinary tribute imposed upon rebellious ethnic groups in the Peloponnese, for example.¹⁹⁴ In the text of document 4 it is the *koitôn* which supplies the extra cash needed to make up the advance payment of the Mardaites of the West. A sum of 166 lbs. 48 *nomismata* in gold was required. 36 lbs were provided by the *patrikios* Michael Ouranos to a certain *patrikios* named Krinites (possibly the commander of these Mardaites¹⁹⁵), and the

189. *Three Treatises*, [B] 101-106; [C] 347-358; and J.F. HALDON, 'Synôné. Reconsidering a problematic term of middle Byzantine fiscal administration', *BMGS* 18, 1994, 116-153, at 128ff.

190. See HINDY, *Studies*, 412 and — on the appearance of both versions of the name, *idikon* and *eidakon* — 628-629; HALDON, *Byzantium in the Seventh Century*, 180-181 with literature. The *idikê trapeza* of the prefecture of the East seems in late Roman times to have functioned as a clearing-house and storehouse of state assessments collected in kind — iron-ore, clothing, weapons, for example — see HALDON, *Byzantium in the Seventh Century*, 182; DOIGER, *Beiträge*, 19f., 35-39.

191. See *Klet. Phil.*, 15.15; DOIGER, *Beiträge*, 21f.; OIKONOMIDES, *Listes*, 314.

192. 662.13-14; 663.4-5. Among the *proeleusimatoi* accompanying the *stratégos* of the Thrakesion theme in 949 was the *protokagellarios* (663.10), attached also to the department of the *stratiôtikon*. See OIKONOMIDES, *Listes*, 110 n. 67 and *Klet. Phil.*, 111.3; 115.19.

193. See BURY, *Administrative System*, 124-125; OIKONOMIDES, *Listes*, 305; DOIGER, *Beiträge*, 25 n.3; and *Three Treatises*, [C] 376 (12 *kontônitaï*); 261-266, 287-289 (sacks of coin for largesse). Note that in the first case the *eidakos* and the *sakellarios* supervise this reserve, and in the second it is the *eidakos* who is responsible for the issue of the largesse.

194. Cf. *De adm. imp.* §50.51-53 and comm.

195. This Krinites may be connected with the family of Krinites Arotas, *protospatharios* and *stratégos* of Peloponnesos at the time of the revolt of the Milingoi and Ezeritai in 921. He was appointed in November 921 to command the theme of Hellas. See *De adm. imp.* §§50.32-54 and comm. Another Krinites, also a

koitón made up the difference with a contribution from central funds of 130 lbs. 48 *nn.*¹⁹⁶ The *koitón* also supplied high-quality garments of silk to the *drouggarios* of the imperial fleet, to be used against expenditure during the expedition.¹⁹⁷ As we have seen, however, the *sakellaríos*, and the *eidikós*, seem to have exercised a supervisory or controlling capacity over this treasury.

c. The imperial *vestiarion*. This bureau, under the authority of the *chartoularios tou vasilikou vestiarioru*, evolved out of the *sacrum vestiarium* within the old department of the *sacrae largitiones*.¹⁹⁸ It included the Constantinopolitan mint within its functions, and seems to have been primarily a storehouse for military and naval equipment and coin, as illustrated by the treatises on imperial military expeditions and this text.¹⁹⁹ It stored finished items of naval equipment in particular, including the liquid fire projectors and other elements of this technology, sails, oars, cordage, nails and clamps, nails, various tools (picks, axes, hammers etc.), associated items, as well as items of personal armour and ships' tackle. It also stored components for artillery and siege machinery, as well as maintaining its own supply of materials such as pitch, hemp, and tar.²⁰⁰

d. The *armamenton*. The production of weapons and arms in general seems to have been organised through two sources: provincial household-production, whereby craftsmen and artisans in the themes were required to produce specific items; and workshops in Constantinople and other towns which were administered (most probably) through the department of the *eidikon*.²⁰¹ The head of the *armamenton* was probably one of the *archontes tōn ergodosiōn* listed in the bureau of the *eidikon* in the *Klētorologion* of Philotheos.²⁰²

prōtospatharios and trusted imperial officer, was given the task of completing the imperial acquisition of certain Armenian territories in the late 920s; he may be the same as, or related to, the Krinites of Chaldia who became governor of Calabria in 945; and possibly with the Krinites of our document 4. The name is probably Armenian. See JENKINS, *De adm. imp.*, comm. to §43.137, with literature; and J.-CL. CHYNET, *Pouvoir et contestations à Byzance (963-1210)*, Paris 1990, 73 and n. 397, for the later *katepanō* of Melitene, Krinites, in the 1060s. An earlier Krinites, Prokopios, was one of the Byzantine generals killed in battle with the Bulgars in 892; cf. R. GUILLAND, 'Patrices des règnes de Basile I^{er} et de Léon VI', *BZ* 63, 1970, 300-317, at 312 (repr. in Id., *Times et fonctions de l'empire byzantin*, London 1976, XI). Michael Ouranos is to be connected with the family of the better-known Nicephorus Ouranos, whose brother was also Michael; cf. J. DARROUZET, *Épistoliers byzantins du x^e siècle*, Archives de l'Orient chrétien 6, Paris 1960, 237. It is unclear whether this Michael was a Constantinopolitan-based official or a thematic officer, perhaps the *stratēgos* of the Kibyrrhaiotai.

196. 668.11-16.

197. 677.14-17.

198. See *Three Treatises*, [C] 131f. (supply of iron for horse-shoes and bits; and hemp for pack ropes); 793f. (distribution of *miliarésia* from the *vestiarion*).

199. *Three Treatises*, comm. 191f.; OIKONOMIDIS, *Lists*, 316; HINDY, *Studies*, 412; LAURENT, *Corpus*, 353ff.

200. See 672.1-15 and 672.16 - 673.11; 676.18 - 677.13.

201. In the sixth century, provincial arms-factories and storehouses were placed under the supervisory authority of the various municipal governments. Cf. JONES, *LRE*, 834-835; and Justinian, *Nov.* 85, 3. See also S. JAMES, 'The Fabricae', in *Military Equipment and the Identity of the Roman Soldier*, J.C. Coulston ed., British Archaeological Reports, Int. series 394, Oxford 1988, 257-331. For the history of the term, see A. STEINER, 'Byzantinisches im Wortschatz der Suda', in *Studien zur byzantinischen Lexikographie*, E. Trapp, J. Diethart, G. Fatouros, A. Steiner, W. Horandner eds., *Byzantina Vindobonensia* 18, Vienna 1988, 149-181, at 170.

202. The documents in the *De ceremoniis* which refer to the *archón* suggest this connection, rather than that he should be numbered among the *kouratores* of the *vestiarion*, for example: see DÖGLER, *Beiträge*, 35-9;

There had been a large and important arms-storehouse at Constantinople during the sixth century and later; and towards the end of that century one (or possibly two) new armouries were constructed near the Magnaura. These were supervised by an official referred to as the *epanō tou armamentou*.²⁰³ As a result of the Arab invasions and the loss of much territory in the Balkans in the seventh century, most of the late Roman *fabricae* or arms-producing establishments seem to have been lost or closed down.²⁰⁴ But during the ninth century, the commander of the armoury appears in an official list, entitled the *archôn tou armamentou*, of *spatharios* rank, with a department headed by a *chartoularios*. A ninth-century seal of Theognostos, *hypatos* and *archôn* of the imperial *armamenta*, suggests the relative importance of the post.²⁰⁵ At the end of the ninth century, he is listed in the *Klētorologion* of Philotheos for the year 899, still of *spatharios* rank; and by the middle of the tenth century he was of *protospatharios* rank.²⁰⁶

That the *archôn* of the *armamenta* at Constantinople controlled both arms storehouses and an arms-producing workshop or workshops is clear from the section in the *De ceremoniis* dealing with the expedition to Crete in 949. The armoury produced axe- and spear-blades in great quantities, amongst other items, from iron obtained from the *eidikon*. Charcoal was also used, and the mention of this makes it clear that there was here a workshop involved in smelting the iron and forging weapons.²⁰⁷ This was presumably the successor to the Constantinopolitan workshop of the sixth century, which had probably continued to function from that time, under the direction of its *archôn*.

Klet Phil., 123.8 and esp. LAURENTI, *Corpus II*, 343ff. and seals, nos. 665-667 (9th c.), 668-670 (10th-11th c.). BURY, *Administrative System*, 100, suggested that the *ergastériarchai kai archontes* represented by some seventh-century seals: PANCHIKO, 'Katalog Molybdoboullov', no. 402; SCHLUMBERGER, 'Inédits', nos. 72, 284, dated to the reigns of Constans II or Constantine IV, were to be equated with the *ergastériarchai*. For some ninth-century seals of such officials, see ZACON, VIGLIERY, nos. 1990(a) and (b); 2309A; 2392(a) and (b); 3164; and LAURENTI, *Corpus II*, see nos. 637ff.

203. Cf. Justinian, *Nov.* 85, 1; *Edict.* viii, 3 (proem); and THEOPHIL., 274.22-24 (*CADENUS*, i, 698.23); CADENUS, i, 709, for the new armouries built by Maurice and Phocas. Cf. Justinian, *Nov.* 85, 3. Reference to the workers in these establishments may be preserved at *De cer.*, 402.2-3, where the *fabricenses* provide items for a public ceremonial event; and *Three Treatises*, [C] 715, where the *fabricenses* of the capital took part in a ceremonial acclamation of Justinian. A Constantinopolitan bowmaker referred to in the *Miracula S. Artemii*, mir.29 (l. 29) (middle of the seventh century) probably belonged to this *fabrica*.

204. In the tenth century, an armoury at Caesarea in Cappadocia may have functioned once more: Basil, bishop of Caesarea comments in a letter to Constantine VII on the subject of one of Gregory of Nazianzus' homilies, that those who fabricated weapons in Caesarea in Gregory's time are called 'by us' *exkoussatoi*. This may well suggest that armourers, exempted from certain fiscal dues (like soldiers and those exempted on behalf of the *dromos*), continued to produce weapons and military equipment at that time. See R. CANTARELLA, 'Basilio Minimo. II', *BZ* 26, 1926, 3-34.

205. ZACON, VIGLIERY, no. 974. See further SCHLUMBERGER, *Sig.*, 325-6, a ninth-century seal of Theophylact, imperial *spatharios* and *archôn tou armamentou*; and AHRWEILER, *Mer.*, 424. From the eleventh century the *armamenton* was referred to as *zabareion*: see T. KOJAN, 'Ζάβα - ζαβαρεῖον - ζαβαρειῶντες', *JÖB* 29, 1980, 27-35, esp. 32ff.

206. *Klet. Phil.*, 155.2; 233.7. The *archôn* as *protospatharios*: *De cer.*, 673.20. The *armamenton* purportedly established by Theophilus may also have come under his command. Cf. R. JANIN, *Constantinople byzantine*, Paris² 1964, 455.

207. 673.20 - 674.4.

There was also a naval armoury to supply the fleet, referred to as the lower armoury (*to katō armamenton*).²⁰⁸ But while these armouries produced a considerable amount of equipment, they could not cover all the demands of the imperial forces. In addition, therefore, and as we have already noted, provincial production played a key rôle. This seems to have been based on impositions on those with the relevant skills of quotes for the delivery of particular items — spears, arrows, axes, and so forth. Assuming continuity of principle from the late Roman period, this will also have involved writing such requisitions off against tax-assessments, albeit at fixed rates favourable to the government, so that the burden on the provincial craftsmen was not too great. But it might also have involved simple corvées, *aggareiai*, which would not have been compensated.²⁰⁹ This is clearly what happened during the eleventh century and after, as illustrated by several documents referring both to the production of ore and charcoal, but also to that of completed weapons and their transportation.²¹⁰

It is probably reasonable to assume that weapons and equipment on this scale were produced only as and when they were required: the information from our texts, especially that concerning the production quotas passed on to thematic officials for the 911 expedition, suggests as much, as well as the fact that the older regulations in the *Codex Iustinianus* and the novels of Justinian prohibiting the private production or possession of weapons were retained in later legislative compilations.²¹¹ The material

208. 676.15, where the Ms. (fol. 226b) reads *apo tou katō armamentou* rather than the *katepanō tou armatos* of the Bonn edn. See N. OIKONOMIDES, 'Το κατώ ἀρματεύτον', Αρχεῖον Ηλόντου 26, 1964, 193-6; ID., *Listes*, 317. ALEXANDER MER, 424 n. 4, basing his argument on the existence of the *epano tou armamentou* of the sixth century, disagrees, and argues for the existence of a later *katepanō tou armamentou*. But as Oikonomides also notes, the sigillographic evidence supports his hypothesis.

209. See, for example, *CTh* xi, 16.15; 18, constitutions of 382 and 390 respectively, dealing with exemptions from levies of timber and planks as well as the burning of wood to produce charcoal.

210. The *eridikon* and the *genikon* managed the ore from mines, as well as other materials for weapons production, such as charcoal, between them. Cf. DOIGER, *Beiträge*, 19-20; 35-39. Such resources were strictly controlled by the state - timber-products and timber were particularly important to the state's building and naval activities. See A. DUNN, 'The Exploitation and Control of Woodland and Scrubland in the Byzantine World', *BMGS* 16, 1992, 235-298, esp. 262ff. A large number of charters and exemptions of the eleventh century and the twelfth century show that the central fiscal bureaux obtained supplies of iron and charcoal, for example, in the form of extra levies on estates or in lieu of other taxes. Cf., for example, *Actes de Laina. Première partie, des origines à 1204*, ed. P. Lemerle, N. Svoronos, A. Guillou, D. Papachryssanthou, Archives de l'Athos V, Paris 1970, no. 48 (259.10-11 = E. DOIGER, *Aus den Schatzkammern des Heiligen Berges*, Munich 1948, no. 3, dated 1086) where an estate is exempted from demands for iron ore and ingots; and cf. *ibid.*, no. 55 (286.10f., dated 1192); MIKONOSCH-MÜLLER VI, 44f. (1088); while an exemption granted in 1228 includes the burning of charcoal: MIKONOSCH-MÜLLER, IV, 1f. See also ZETOS, I, 617; MIKONOSCH-MÜLLER, V, 21. (for sources of Byzantine ores, especially iron, see S. VRYONIS, 'The Question of the Byzantine Mines', *Speculum* 37, 1962, 1-17; and *ODB*, 1375-1376, art. 'mines'). Localised extraction and smelting of ores appears not to have been as closely supervised by the state as timber: see the account of Niketas Magistros (*Nicetas Magistros. Lettres d'un Exilé* (928-946), ed. I.G. Westerink, Paris 1973, letter 5, 9ff.) referring to the extraction of iron-ore from the ore-bearing sands along the southern Black Sea coast in Bithynia.

211. Cf. *Bav* lvii, 9.1 (= Justinian, *Nov.* 85); *Procherros Nomos (Imperatorum Basili, Constantini et Leonis Prochiron)*, ed. C.E. Zacharia von Lingenthal, Heidelberg 1837, xxxix. The memorial stone of a bow-maker from the seventh or eighth century may be evidence of independent craftsmen in the provinces, perhaps attached to local military garrisons. See, for example, H. GRIGOIRE, *Recueil des inscriptions grecques chrétiennes d'Asie Mineure*, Paris 1922, no. 308 (= CIG no. 9239) from the Attaleia region.

produced for the 911 expedition was then delivered to the appropriate point for collection and distribution to the troops; what was surplus to needs was probably conveyed to Constantinople, and stored in the *armamenton*.²¹²

The degree of co-operation required to make this system work is obviously considerable. The role of the *sakellarios* and his officials in the *sakellion* (under the direct control of the *epi tou sakellion*) must have been crucial. Yet given the available communications and speed of movement of officials and information, keeping track of the material, men and hardware must have presented numerous problems. It is quite clear from the documents for 949 that this was the case: there was obviously a query about the numbers of Thrakesion troops which participated and actually went to Crete (as opposed to those originally listed as being intended to participate), and similarly about the pay issued or claimed by the naval *themata*: the *tetradion*, or account-book, was to be consulted on the issue.²¹³ By the same token, items of equipment or supplies could go astray: in 911, for example, and as noted above, an enquiry about funds of cash which had been issued the previous year had to be made, as well as concerning missing tools such as pickaxes, and items of naval equipment such as rams and iron fittings. A member of the imperial *koitôn*, thus a confidant of the emperor and his immediate staff, was asked to clarify the matter, by sending his *notarios* or clerk to the emperor personally with the register and accounts for the items.²¹⁴ If the use of the first person in the documents for 911 (at 660.5) is indeed indicative of an imperial hand in the drafting of the record, or this particular section of it, then this is indeed proof of the close degree of interest and involvement of Leo VI in this campaign. Nothing symbolises better the personal element and the position of the rulers as the focus for power, both in ideological and practical terms, than this involvement in one of the most costly military operations ever undertaken in the long history of the medieval eastern Roman state.

7. Bread for the army

The question of the quantities of unmilled grains the army required for its soldiers and livestock is complicated by several factors, in addition to a relative sparseness of detailed statistical evidence, especially from the middle Byzantine period. In particular, the values of the weights and measures used in Byzantine texts, as well as the more detailed and informative material from the late Roman period and before, are still by no means generally agreed. In addition, the technology of milling and baking, and the types of grains involved, present several problems. What follows is a brief attempt to

212. Cf. *Logos Noubebetikos pros Basileia* (in: K. KAUMENOS, ed. Wassiliewsky-Jernstedt, 93-104), 100.8ff. advising the emperor to maintain a good stock of weapons and other military equipment in Constantinople. Such equipment presumably came from the provinces as well as from the *armamenton*. Cf. also *Patria tés Konstantinopoleós* (in: *Scriptores Originum Constantinopolitanarum*, ed. Preger, Leipzig 1901, 1907/New York 1975, I, 1-18; II, 135-289), 216, 8: engines for siege-warfare were stored in the Mangana.

213. 667.1-3 (Thrakesion); 668.5-7 (the three *plorothemata*).

214. 660.1-5.

recapitulate the evidence available in this respect, and to give some idea of the relationship between the needs and rate of consumption of the army, on the one hand, and the producing population on the other.

i) *Grains and the production of bread*

Soldiers were issued with, or themselves milled and baked, two main varieties of bread: simple baked loaves, and double-baked 'hard tack', referred to in late Roman times as *bucellatum* and by the Byzantines as *paximadion* or *paximation*. The hard tack kept better and much longer, was easily produced in field conditions, and required a relatively unsophisticated milling and baking technique.²¹⁵ Hard tack could be baked either in field ovens — *klibanoi* — or simply laid in the ashes of camp-fires: the latter technique was no doubt employed when speed of movement was a priority. A tenth-century treatise specifies that the best such bread was baked in thin oval loaves cooked in a field-oven, and left to dry out in the sun.²¹⁶ Hand-mills were a requirement of the Byzantine infantry-unit baggage-train (although the military treatises represented a theoretically desirable state of affairs which may not always have reflected actual practice), and mills operated by several men were employed by Roman armies of the Principate and early Dominate.²¹⁷

The chief grains employed comprised wheat, barley and millet, although other grains were used, depending upon both the region and the period.²¹⁸ Barley was regarded primarily as hard feed for livestock, although it, and millet, may have been regularly used for the hard-tack *paximadion*.²¹⁹ The military treatises often refer to the soldiers' baggage-train carrying both barley — *krithos/kritharion*²²⁰ — as well as millet — *kegchros*. But wheat was the normal ingredient for bread. And it should be borne in mind that ancient strains of wheat and barley had considerably higher protein content than modern strains, so that — regardless of the protein loss inevitable in the process of baking milled grain to produce bread or biscuit — the bread ration of soldiers in ancient and medieval times provided adequate nutrition even without meat.²²¹

215. For the Roman and later Roman periods, see DWYERS, 'Roman Military Diet', esp. 125f.; G. WIBNER, *The Roman Imperial Army of the first and second centuries A.D.*, London 1969, 254f.; JONES, *LRE*, 628f. For the middle Byzantine period, see KOIKOVS, 'Eßgewohnheiten', 193-202, at 197-199; and on types of bread, KOUKOURIS, 'Onomata', 45-46, 49-50; and, in a revised form, in BBP 5, 12-35; KAIKANI, TIEZI, *Lingua Franca in the Levant*, 555f. For *bucellation* and its qualities, see esp. PROCOPIUS, *BV*, 1, 13.12-20.

216. *Syll. tact.*, §57.2. On the *klibanon* (or *kribanon*), from lat. *chbanum*, see KOUKOURIS, 'Onomata', 48; BBP 5, 26-27.

217. See *Syll. tact.*, §38.12 (and cf. MAURICII, *Strat.*, xii B, 6.5; LEO, *Tact.*, vi, 27; v, 6). Handmills can be operated with considerable efficiency: experiments with handmills from the Roman fort at Saalburg demonstrated that 4-6 men could mill up to 220 pounds of grain into flour in one hour: cf. *Saalburg-Jahrbücher* 3, 1912, 75-95 and the discussion in DWYERS, 'Roman Military Diet', 126 and n. 31.

218. See TIEZI, 'Grain Supply', 91-92, 99-100.

219. KOUKOURIS, 'Onomata', 50; BBP 5, 21f.

220. For the appearance of *kritharion*: J. DIETHEART, 'Materialien aus den Papyri zur byzantinischen Lexikographie', in *Studien zur byzantinischen Lexikographie*, E.F. TRAPP, J. DIETHART, G. FATOURES, A. STEMER, W. HORANDNER eds., *Byzantina Vindobonensis* 18, Vienna 1988, 47-69, see 58; and KRIARAS VIII, 388.

221. For grains and the areas where the various strains were cultivated, see K.D. WHITTLER, *Roman Farming*, London 1970; and for Byzantium from the seventh century, TIEZI, 'Grain Supply', 117-132. From the seventh

although it is not the case that meat — either fresh, when in camp or garrison, or dried/salted, when in the field — was not also a regular element, even if reduced to a minimum in campaigning contexts.²²²

ii) Weights and loads

In order to calculate the relative value of the amounts of grain provided by the thematic authorities in the list of supplies for the expedition of 911, however, the value of the measures which are used must first be established, and this is still to a degree problematic, in spite of the work of Schilbach, for example, in this field. These calculations depend, in effect, on a range of variables which have aroused a great deal of disagreement. The measure used in the majority of texts dealing with grain from the middle Byzantine period is the *modios*; but since there were several different *modioi*, and since the relationship between the various *modioi* and other measures, such as the *litra*, on the one hand and, on the other, late ancient values for weight and volume such as the *artaba* remain unclear, it is not possible simply to read off the values from the texts in question.

Most of the information on the relationship between the *artaba* and the *modios* for the late Roman period comes from Egyptian documents; and although there are some difficulties (because of the variety of equivalences given in different localities), an equivalence of 4.5 basic (or 'Roman') *modioi* or 3.3 *modioi xystoi* to the *artaba* can be derived from fiscal documents of the fifth and sixth centuries; although there are several other equivalences, depending on which of the various *modioi* are meant.²²³ The issue is complicated by the fact that the *modios* is a measure of volume or capacity, and that in consequence it is difficult to extrapolate a weight in order to calculate the results of any conversion from grain, to flour and thence through the baking process to bread. Equivalences between volume and weight must therefore remain averages, the more so since different types of grains weighed differently and were of different density, so that a *modios* of barley is by no means the same quantity, by weight or by product, as a *modios*

century, a species of hard wheat appears to have been introduced and spread throughout the eastern provinces of the empire (see esp. A.M. WILSON, *Agricultural Innovation in the Early Islamic World*, Cambridge 1983, 20), and this brought certain advantages. Hard wheats have a protein content of some 11%-15% compared with the 8%-10% of soft wheats, and produce a flour better suited to bread-making. On nutritional values, see P.J. REYNOLDS, *Iron-Age Farm: the Butser Experiment*, London 1979.

222. See the remarks of DWYER, 'Roman Military Diet', 126ff., and KOELAS, 'Eßgewohnheiten', 199-200.

223. See R.P. DUNCAN-JONES, 'The Size of the Modius Castrensis', *ZPE* 21, 1976, 53-62. Note that the conclusions and equivalences given in L. MÜLLER, U. WIECKEN, *Grundzüge und Chrestomathie der Papyruskunde*, I, I, Leipzig 1912, LXVIII; as well as the assumptions made on this basis by a number of other scholars: cf. E. PAUAGAN, *Pauvrety économique et pauvrety sociale à Byzance, 4^e-7^e siècles*, Paris 1977, 51; J. IRMSCHER, 'Preise und Löhne in frühen Byzanz', in *Studien zum 8. und 9. Jahrhundert in Byzanz*, BBA 51, Berlin 1983, 23-33, at 26; both following SCHILBACH, *Metrologie*, 111 (and assuming a rate of *artaba: modios* of 1:2 or even less), have been considerably revised in more recent work. See esp. R.P. DUNCAN-JONES, 'The Choenix, the Artaba and the Modius', *ZPE* 21, 1976, 43-52, at 52; D. RATHBONI, 'The Weight and Measurement of Egyptian Grains', *ZPE* 53, 1983, 265-275; and also J. GASCOU, 'La table budgétaire d'Antacopolis (*P. Freer 08.45 c-d*)', in *Hommes et richesses dans l'Empire byzantin*, I: *IV-VI^e siècle*, V. Kravari, J. Lefort, C. Morrisson eds., Paris 1989, 279-313, at 286-287. The *modios xystos* (or 'flat modios') seems to have been almost the same as the later *antronikos modios*: SCHILBACH, *Metrologie*, 99.

of wheat.²²⁴ Matters are further complicated by other factors, in particular the variable value of the Roman pound (calculated at 327.45 g. in the late Roman period), which in the middle Byzantine period have fluctuated to a mean of as little as 320 g. in the 9th-10th centuries, thus further reducing the weight-value of the *modioi* in question.²²⁵ The *annonikos modios* has been calculated at 26.6 Roman pounds (@ 320 g.: pound, i.e. 18.75 lbs avoirdupois/8.7 kg).²²⁶ This was probably the *modios* used to calculate the military *synônené*, a conclusion based on calculations using middle Byzantine figures for pack-animal loads.²²⁷

iii) Milling and baking

One document states clearly that 80 (Roman) lbs of 'dry' bread (i.e. 25.6 kg/56.3 lbs) could be baked from 1 *artaba* of wheat.²²⁸ 1 *artaba* of wheat is the equivalent of 3.3 *modioi xystoi* @ 26.6 Roman pounds, that is to say, 87.78 Roman pounds (28.7kg/63.2 lbs).²²⁹ Now, in pre-modern milling, which was less efficient than industrial techniques, a greater proportion of bran and wheatgerm would be included in

224. See SCHUBACH, *Metrologie*, 95 and n. 4. A weight ratio of barley:wheat of 5:6 can be derived from ancient documents in conjunction with figures taken from the modern weights and volumes for these grains: *ibid.*, 95 n. 3, with further literature.

225. SCHUBACH, *Metrologie*, 162ff., 174.

226. SCHUBACH, *Metrologie*, 99.

227. The approximate maximum weight a horse or mule can transport over reasonably long distances is about 250 lbs (114 kg), and a little more over short stretches (see W.C. SCHNEIDER, 'Animal laborans. Das Arbeitstier und sein Einsatz im Transport und Verkehr der Spätantike und des Frühen Mittelalters', in *L'Uomo di fronte al mondo animale nell'alto Medioevo*, Settimane di Studio del Centro Italiano di Studi sull'alto Medioevo 31 (Spoleto 1983), Spoleto 1985, 457-578, at 493-554), although the optimum has generally been set at about 200 lbs in modern and immediately pre-modern pack-trains (see W.B. TIGHE, *Horses, Asses, Mules and Mule Breeding*, Washington D.C. 1897, 129). In the Edict of Diocletian (14.11) a load of 200 Roman pounds (65.49 kg./144 lbs) is prescribed; a sixth-century source gives mules a total burden of 156-166 Roman pounds (110-116 lbs/50-53 kg.); CASSIODORUS, *Variac* (MGH [AA] xii, 1-385) iv, 47.5; v, 5.3, which seems especially light, although compares well with the 6 *modios* mentioned in the ninth-century *Vita Philaretii* (M.-H. FOURNY, M. LIPKOV, 'La vie de S. Philarète', *Byz* 9, 1934, 85-170), 131.2-3, although the text does not in fact suggest that this is a maximum. Similar limits are established by the imperial legislation on the public post: *CTh* viii, 5.8: 17, 28: 30 etc. For further comparative discussion, see B.S. BATHURST, 'Animals and Warfare in Early Medieval Europe', in *L'Uomo di fronte al mondo animale nell'alto Medioevo*, 707-751, at 716-720.

In Byzantine measures, this maximum would be ca. 356 pounds i.e. 8.9 *thalassiot* (*basilikoi*) *modios*, or 13.34 *annonikoi modios*. The maximum permitted load for an animal in the imperial baggage-train in the ninth and tenth centuries was set at 10 *modios* (*Three Treatises* [C] 411-414, 549-553; and this will have been without the pack-saddle (*sagma*) and harness which, according to the legislation of the fourth-sixth centuries, weighed approx. 50-60 Roman pounds (32-42 lbs/16-19 kg, equivalent to 51-62 Byzantine pounds); cf. *CTh* viii, 5.47 and C/xii, 50.12. Using the larger *thalassios modios* of 40 Byzantine pounds as a basis for calculations, this would result in an impossibly heavy load of 450 pounds, or 144 kg/319 lbs avoirdupois. Using the smaller *annonikos modios* of 26.6 Byzantine pounds, the load would weigh some 266 pounds, and with the pack saddle, a total of 316 pounds, i.e. ca. 101kg/223 lbs. Given the various maxima decreed in the different late Roman and Byzantine sources referred to, therefore, these results strongly suggest the *annonikos modios* as the basis for calculation of middle Byzantine military supplies.

228. *P. Oxy.* XVI 1920, with the comments of A.C. JOHNSON, L.C. WEST, *Byzantine Egypt. Economic Studies*, Princeton 1949, 183. Assuming that the Roman pound of 327.45g. is meant.

229. Using the Roman pound of 327.45g.

the flour; and in field- or campaign-conditions, the grinding process would tend to be both more rapid and produce a far less refined flour. After grinding, an average return in flour of between 75%-90% on weight of grain would result, somewhat higher than the 72% produced by modern milling and extractive processes. In the case in hand, and assuming the least favourable conditions for grinding, 1 *annónikos modios* of grain (26.6 Roman pounds) would produce between 20 and 24 Roman lbs of flour.²³⁰ In modern baking, a return of at least 2:1 on weight of flour:bread is usual, since rolling and milling techniques produce a greater amount of damage to the starch elements, which in turn increases water-absorbency and water-retentive capacity, and thus overall weight. In ancient and medieval bread-making, although fine white bread (using only some 75% of the product of grinding and milling) was certainly produced for the luxury market,²³¹ the degree of water-absorption was much less, especially in the case of *bucellatuni* and biscuit (hence the description of some Egyptian bread in papyrus documents as 'dry' bread). Thus the return on flour per weight of dough produced was lower, varying from 1:1 to 1:1.75, depending on type of grain milled, the degrees of refinement of the milling process, and other variables.²³²

The ratio of 1 *artaba* to 80 (Roman) pounds of bread bears these figures out: as we have seen, 87.78 Roman pounds of wheat, after milling (i.e. the loss of an average of ca. 20% of weight, leaving ca. 75 pounds of flour) and baking, produced only 80 pounds of bread. The figures given in the text for the expedition of 911 can thus be employed to make some, admittedly rather generalised, statements about the proportion of supplies provided from Asia Minor at the start of the expedition, and the proportion derived — presumably — from the islands and/or from enemy territory.

A total of 40,000 *modioi* of barley (20,000 each from Thrakesion and Anatolikon/Kibyrrhaiotai) and 40,000 *modioi* of wheat, as well as 60,000 *modioi* of flour was to be supplied, in addition to further unspecified quantities of *paxamation*, wheat and flour.

It is not stated whether the flour is wheat flour or barley flour (or even millet);²³³ but it is possible that the unspecified quantity of wheat required from the Anatolikon region was the same as that provided by the Thrakesion (as was the case with the barley). Leaving aside the unspecified quantities for the moment, the 40,000 *modioi* of wheat and 60,000 *modioi* of flour would total, after the milling of the wheat (i.e. deducting an average 15% weight of the wheat as loss through grinding), some $34,000 + 60,000 = 94,000$ *modioi* of flour. Assuming the *annonikos modios* is meant (which is probable, but by no means certain), this gives us some 2.54 million Roman pounds of flour (817,000 kg/1,762,500 lbs), which would bake into ca. 2.6 million Roman pounds of bread (approx. 818,000kg/1,770,000 lbs).

230. On returns on milling and grinding, see D.W. KENT-JONES, 'Processing of Major Food Groups: Cereals and other Starch Products', in *The New Encyclopaedia Britannica*, 19: *Macropaedia*, Chicago³ 1995, 346-355, at 347-348; and L. SMITH, *Flour Milling Technology*, London³ 1945.

231. See M. KAPLAN, *Les hommes et la terre à Byzance du VI^e au XI^e siècle. Propriété et exploitation du sol*, Paris 1992, 28-29; KOUKOURIS, 'Onomata', 36-41; BPP 5, 12ff.

232. For statistics on baking, see the appropriate chapters in *The Chemistry and Technology of Cereals as food and Feed*, S. Marz ed., London 1959; and D.W. KENT-JONES, *art. cit.* (n. 229), 350ff.

233. 659,7-12.

iv) *Rations and the supplies for the expeditions of 911 and 949*

In the late Roman period, rations had been issued on a particular rotational basis and in fixed proportions. It is highly likely, given the strong elements of continuity from late Antiquity evidenced throughout Byzantine military administrative practice, that similar proportions and rates of issue were retained.²³⁴ At a standard rate of ca. 2 lbs of bread *per diem*,²³⁵ this would support the 47,000 or so soldiers, sailors and others listed for the expedition for a maximum of 18 days. If we assume that the traditional rotation of diet for the Byzantine army was retained from late Roman times, then the *paximadion* would have covered the army's requirements for one day in three, bread being issued for the other two. The expedition might thus have supported itself for a further 6 or so days (although the documents give no indication of how much *paximadion* was taken), making a total of about 24 days.²³⁶

Limitations on the distance that could be travelled might also have been imposed by the need to feed and properly care for the cavalry mounts and spare horses, as well as the pack-animals required by the force. Evidence from the Roman period shows that cavalry mounts needed some 20 lbs (9 kg) of fodder per day: 5-6 lbs (2.2 - 2.7 kg) barley and a further 10-15 lbs (4.5 - 6.8 kg) hay or grazing; and whereas horses can do without the former for short periods, the latter is essential to their well-being. On campaign the size of the ration was reduced by some 20%-25%. In this case, hay would have been a necessary part of the fleet's provisions for its animals, until it arrived on Crete.²³⁷ Assuming that the number of cavalry soldiers was the ca. 6,000 listed in sections of the documents, anything from 600 - 1500 remounts — an absolute working minimum — will also have been required, so that barley feed for between 6,600 and 7,500 horses alone (but possibly as many as 10,000 - 12,000), quite apart from other pack-animals

234. The amount of such rations varied: 1 Roman pound of meat and/or 2-3 Roman pounds of bread *per diem* per man was probably standard into and beyond the seventh century in Egypt. See *P. Oxy.* XVI 2013-4; and cf. J. GANOU, 'La table budgéttaire' (cit. n. 223). See further C.E.P. ADAMS, 'Supplying the Roman Army: *O. Petr.* 245', *ZPE* 109, 1995, 119-124, at 122; and discussion in HALDON, 'Organisation and Support', 123-132.

235. HALDON, 'Organisation and Support', 124-126, with sources and literature. However, it is clear that under certain circumstances this ration was considerably smaller: LEO, *Tact.*, vi, 29, notes that, where infantry forces need to move ahead more quickly than the accompanying supply-train of carts, each mess group of 16 men should be allotted a mule or pack-animal to carry enough supplies for 8 to 10 days. Even with an absolute minimum ration of 1.5 pounds of provisions *per diem* per man, this would still result in a load of 192 pounds which, together with the pack-saddle, would be a considerable burden according to Byzantine standards. The text goes on to note that where enough pack-animals cannot be provided, one animal should carry the supplies for 32 men. In view of these figures, we should assume in both cases that the men actually carried their own loads (up to 60 Roman pounds: see HALDON, 'Organisation and Support', *loc. cit.*), and that the pack-animals transported other equipment and extra supplies. For comparable conclusions in respect of the Roman army of the late Republic/early Principate, see J. PINDLE, *The Roman War Machine*, Stroud 1994/1996, 50f.

236. *C.Th* vii, 4.4 (a. 361); 5; 6; 11 (a. 360).

237. See, for example, T. REIKMANS, *A Sixth-Century Account of Hay (P. land. Inv. 653)*, Pap. Bruxellensia 13, Brussels 1962, chapter 3; J. PINDLE, *The Roman War Machine*, Stroud 1994/1996, 52f. In addition, horses require a basic 5-8 (UK) gallons (22.75 - 36.4 ltr) of water (the amount varies according to conditions, of course): see A. HYLAND, *Equus. The Horse in the Roman World*, London 1990, 90, 96; and the discussion and amendments to the figures given by Hyland in HALDON, 'Organisation and Support', 126 and n. 57.

which might have accompanied the expedition, would have been necessary.²³⁸ At an average rate of 2.5 kg barley per animal per day, the 40,000 *modioi* of barley — some 348,000 kg /750,000 lbs — would feed the lower estimate of animals for between 18 and 21 days at the outside, a figure which coincides with that for the wheat and flour supplies for the soldiers and sailors of the fleet. If, on the other hand, we assume, as I have suggested above, that the total for the cavalry on the expedition was actually just over 4,000, with a corresponding number of remounts of, say, 1,000, then a further eight - ten days' feed could have been provided from the barley for these animals. As with the supplies carried for the soldiers and sailors, this gives a period of some 24 or slightly more days' worth of supplies. It is interesting to note, therefore, that the tenth-century treatise on campaign organisation remarks that an army cannot transport more than a twenty-four days' supply of barley for its horses, which might serve to confirm this calculation, and perhaps to suggest that this length of time was the standard basis upon which Byzantine administrators calculated the requirements of field forces.²³⁹ Given the estimated maxima for the amount of water that a Mediterranean galley could carry in addition to its complement and other supplies — estimates vary from enough for approximately 20 days down to a maximum of one week — we may reasonably conclude that the supplies carried by the Cretan expeditionary force were intended to provision the fleet and army for no more than this period. That the fleet would certainly have had to make some stops to water animals as well as troops and other personnel is clear; to what extent additional supplies were taken on board (which would have involved arrangements with the administrators on, say, Samos or Naxos), remains unclear, and no reference is made to such administrative requirements in the documents at our disposal.²⁴⁰

238. The ratio of remounts to soldiers is difficult to assess. The rate of replacement of horses for the public post was set at 25% *per annum* in the fourth century (*Clh* viii, 5.34, a. 377). It was probably much lower for a field army on the move; but a rate of replacement of 10% would only barely cover average rates of loss. According to the diagrams accompanying the late sixth- or early seventh-century *Strategikon*, the remounts which accompanied cavalry units into battle numbered only some 5%-6% of the total. But the same text also notes that remounts should be held back at the base camp, with the rest of the baggage train, so that this was clearly a minimum provision, for the battlefield only (*Strat.*, v. 2.1ff.; v. 4.3ff. = *Lfo*, *Tact.*, x, 7; 12. Similar provisions are mentioned in an independent text: cf. *Praecepta*, p. 5.13). Two of the later tenth-century treatises imply a remount rate for advance units and the main lancer division (as opposed to mounted archer units) of 1:1. Cf. *De uelitatione*, §14.35-36; *Praecepta*, p. 13.1. Yet the latter also specifies that not too many spare horses (*ta syrta*) should be taken along with raiding parties, lest they unnecessarily encumber the raid (*ibid.*, p. 14.27-32). Similarly, in the report sent by Heraclius to Constantinople of his campaign in 627-628, mention is made of the cavalry being ordered by the emperor to leave their spare horses in the houses of Kanzak, near which he had established his main base, and that each soldier should retain only one horse. The implication is that more than one spare animal per soldier was available; see *Chron. Pasch.*, 732.11-14.

239. *De re militari*, §21. 22-23, trans. Dennis, p. 302f.

240. Although most of the evidence is from the thirteenth century and later, the fundamental similarities in size and hull-design from the middle Byzantine period through to the fifteenth and sixteenth centuries make such comparisons acceptable. See PRYOR, *Geography, Technology and War*, 75-86; and — for merchant vessels — KOUKOURIS, *BPP* 5, 363ff. For lower estimates (with which Pryor is now in accord) see e.g. J. MORRISON, in *The Age of the Galley. Mediterranean naval vessels since pre-classical times*, R. Gardiner, J. Morrison eds., London 1995, 114, 206ff., 217ff.; and on means of transporting water, see M. CAGLIANO DE AVILVEDO, 'Le navi nella documentazione archeologica', in *La navigazione mediterranea nell'alto medioevo*, 1, 413-428, at 421-423.

Needless to say, all these figures are entirely hypothetical, and we have no way of knowing whether the breakdown of the barley, whear, flour and biscuir provided actually represents the numbers of men and animals assumed in these calculations. Nor do we have any hint of the amount of hay that was carried on the ships for the horses; nor again of whether the barley feed — assuming that the barley was indeed intended for the horses in the first place²⁴¹ — was for the cavalry horses alone, or was intended also for pack-animals. If this were the case, then the length of the voyage that could be made before resupplying became essential would have been considerably reduced. Finally, some of the animals' requirements are not listed at all — hay, or green feed, for example, an essential for the cavalry horses. This was presumably carried in the transport vessels which also carried the horses. But they receive only the briefest of mentions — not at all in the documents for 911, and in the documents for the expedition of 949 merely to the fact that there were not enough such vessels.²⁴² Nevertheless, and in spite of these unknown variables, they do give some idea of the possible relationship between supplies and the size of the expedition.

The distances given in the brief *stadiodromikon*²⁴³ at the end of the documents for the expedition of 949 total 792 Roman miles (ca. 1,246 km),²⁴⁴ which with favourable summer winds (from the north and north-east) could be sailed directly in about 12-14 days, but could easily take several times as long if the wind shifted or was too strong.²⁴⁵ It is not clear from the *stadiodromikon* that the fleet was expected to make fairly frequent landfall, since the islands or locations listed would appear to mark out the route, rather than points at which the fleet was to halt and disembark.²⁴⁶ This route would nevertheless present the most direct way to take a large force from Constantinople, down the coast of western Asia Minor, and across to Crete, and it seems a reasonable proposition, therefore, that the amount of supplies provided from the *themata* and listed in the documents for the 911 expedition was indeed intended to supply the fleet until its landfall in Crete and establishment of a base camp. Thereafter, foraging on the island — and on 'enemy territory' — would have been the means of supporting the army as well as the fleet.²⁴⁷

241. From late Roman times onward the military treatises always specified barley (together with bran and green fodder) for the cavalry mounts, rather than the soldiers: cf. MAURICE, *Strat.*, ix, 3.125; LEO, *Tact.*, xi, 12; *De re militari*, §21, 22-23, trans. Dennis, p. 302f.

242. 663.13-15.

243. On the Byzantine portolan tradition, see AHRWEILER, *Mer*, 451; and on routes to and from Crete, and in the Aegean region in general, PRIOR, *Geography, Technology and War*, 6ff., 94-99; CHRISTIDES, *Conquest of Crete*, 167, 221-224. For some more general considerations, see A.I. UDOWICZI, 'Time, the sea and society: duration of commercial voyages on the southern shores of the Mediterranean during the High Middle Ages', in *La navigazione mediterranea nell'alto medioevo*, Settimane di Studio del Centro Italiano di Studi sull'alto Medioevo 25, Spoleto 1977, ii, 503-546.

244. See SCHUBACH, *Metrologie*, 35-36: the Roman/Byz. mile = 1574.16 m.

245. See PRIOR, *Geography, Technology and War*, 1ff. and 71-75.

246. MAURICE, *Les îles*, 544.

247. The imperial government was always keen to minimise the burden of supporting armies placed on the ordinary producing population, although its efforts were not always particularly successful. See HALDON, 'Organisation and Support'; TEALL, 'Grain Supply', 113.

The issue of the *stadiodromikon* is not straightforward, however. For as has been pointed out, the expeditionary forces to Crete for 949 and 961 both had as their main base and starting point the harbour at Phygela, south of Ephesos (although Nicephorus II changed his base at the last minute because of the apparent association of the name with the word for 'flight' [*phygē*]).²⁴⁸ Secondly, it is clear from the Byzantine accounts of the 961 expedition that general knowledge of the seaways and winds was limited, and that only the sailors of Karpathos were able to guide the fleet onward to Crete.²⁴⁹ The fact that the *stadiodromikon* begins in Constantinople is not in itself an objection, since part of the expedition may well have begun there, before sailing down to meet the other sections at Samos, for example.²⁵⁰ Nevertheless, these considerations might suggest that the *stadiodromikon* may not have represented contemporary practice and navigational know-how, but rather a theoretical statement of a desired route.²⁵¹

8. Some remarks on the figures for the pay of the army in 911 and 949

This is not the place to go into a detailed analysis of the pay and emoluments of Byzantine soldiers, an exercise which would involve a re-examination of the relevant material from the late Roman period on, and which would entail also a discussion of aspects of the state's fiscal structures which is not appropriate here. But the figures given as totals for the pay and advance pay of the various units which participated in the two expeditions to Crete of 911 and 949 give some idea of the expense of such undertakings. They also make it clear that payments for such undertakings were a mixture of the regular emoluments of the units involved, and also included a large number of special campaign payments, intended no doubt both to encourage a willing participation of the troops and to compensate them for duties which were more dangerous than their usual service.²⁵²

Two types of payment are listed, the *roga* of the troops, that is to say, their 'regular' pay, insofar as they received a regular salary; and the *prochreōn* of certain units. The latter appears to represent an additional payment made to cover the initial costs of properly equipping and outfitting, and possibly also mounting, in the case of cavalry,

248. See ATTALIATES, 224.3-14; AHRWEILER, *Mer*, 115 n. 3, and MALAMUT, *Les îles*, 88. CHRISTIDES, *Conquest of Crete*, 222, suggests that Attaleiates' story is a later legend with no basis in reality.

249. ATTALIATES, 224.16-22. CHRISTIDES, *Conquest of Crete*, 222, argues that Nicephorus Phocas' 961 expedition could not have stopped at Karpathos due to the prevailing summer and autumnal winds, which make access to its main ports particularly difficult and dangerous. But Attaleiates merely notes that the commander, Phocas, 'along with the whole fleet' stopped in or on the island of Neos for a time. The clear implication is that the fleet moored off the said island, until the two vessels from Karpathos arrived to offer their assistance.

250. *Pace* MALAMUT, *Les îles*, 545.

251. See G. HUNTY, 'A Porphyrogenitan Portulan', *GRBS* 17, 1976, 295-300. In contrast, CHRISTIDES, *Conquest of Crete*, 176-177, argues that it represents merely a badly-edited version of a real 'portulan' in use at the time.

252. A point already noted: see J.-C. CHEYNET, É. MALAMUT, C. MORRISON, 'Prix et salaires à Byzance (X-XV^e siècle)', in *Hommes et richesses dans l'Empire byzantin*, II: X^e-XIV^e siècle, V. Kravari, J. Lefort, C. Morrison eds., Paris 1991, 339-374, see 366.

the units in question. It is noticeable, for example, that each of the *themata* of the Kibyrrhaiotai, of Samos and of the Aegean, which had to provide in addition to their basic levy an additional 1,000 soldiers or sailors (*diploï*), were to be paid a *prochreοn* for 1,000 men each. The newly-recruited *Platanianatai*, in contrast, who were to join the establishment of the *tagmata*, received no *prochreοn*, but were paid at a slightly higher rate than the other Armenian and regular thematic units; they were also required to obtain their equipment from this *roga*, unless they had not yet received it, in which case they were to be supplied by compulsory levy in their *thema* and from the state *mētata* or stud-farms (as other tagmatic troops appear to have been). This would support the suggestion that *prochreοn* denotes sums disbursed for soldiers who were newly-mobilised and needed advance payments for equipment. Neither the regular units from the Thrakesion, nor the cavalry *tagmata*, nor the regulars from the three naval *themata* received a *prochreοn*.

The same considerations would apply not just to new recruits or units, however, but also to units which were called up only infrequently. Thus the Mardaites of the West in 911 received a *prochreοn* of some 50% of the *roga* also paid to them; similarly the Armenian units from Sebasteia and Prine received a *prochreοn*, perhaps as an extra campaign inducement. This may be borne out by the salary ascribed to the troops from Sebasteia, a total of 1 *kenténarion*, 13 *litrai*, 24 *nn.*, of which just under half was paid as *prochreοn* (55 *litrai*, 60 *nn.*). Whether the *prochreοn* was paid out of the sums allocated in the text as salary, or is additional, is not clear, but the former is more likely given the word itself. In most cases, the ratio between *roga* and *prochreοn* is approximately 2:1. This applies to the Mardaites, for example (see table i, 8 [C] - [E]), the figures for which give a regular *roga* of more-or-less exactly 8 *nomismata* per man (apart from the 1,000 extra men paid at that rate), having deducted the salary for the officers (which also works out at approx. twice the rate of the *prochreοn* payment).²⁵³ Similar results derive from the figures given for the Armenians of Sebasteia (table i, 13 [D] - [E]); while the figures for the 500 Armenians of Prine show that the original rate of *prochreοn* to *roga* was exactly 1:2, and that each man would have received 4 *nomismata* pay and 2 *nomismata* as *prochreοn*. In the event, only 400 soldiers were recruited for the campaign, and the 400 *nn.* surplus were distributed among the 400 men who did go (table i, 15 [D] - [E]).

The figures from the documents for the expedition of 949 are less enlightening. The figures given for the pay (*roga*) and the *prochreοn* of the Mardaites of Nikopolis, Peloponnese and Kephallenia are the same: in the first case 3,000 men receive 1 *nomisma* each per month for four months, totalling 166 pounds of gold and 48 *nomismata*; the *prochreοn* is set at 4 *nomismata* per man, making a further sum amounting to the same sum (table ii, 9 [C] and [D]).²⁵⁴ Otherwise, the documents give rates of pay for the naval *themata* (5 [E], 6 [E], 7 [E]; and cf. cols. [B] and [C] for the

253. Taking the initial figure of 4,087 officers and men; deducting the 87 officers at a rate of 2 x their *prochreοn* (i.e. *prochreοn* = 864 *nn.* x 2) gives a *roga* of 33,584 *nn.* - 1,728 = 31,856 ÷ 4,000 = 7.956 *nn.* per man. Assuming a very minor adjustment to the rates taken for the officers, this actually produces a round 8 *nn.* per soldier.

254. See 668.11-17; 17-19: the pay is specifically differentiated, as 'a further 166 pounds and 48 *nomismata*' (l. 19), from the *prochreοn*.

sum total of pay for each of these three *themata* and the numbers of men involved. Although the rates of pay and the grades of officers is given in col. [E], the number of each class of officer is not, so that it is difficult to establish how many of each tank actually went on the expedition. Several permutations are possible.

What is particularly clear from this set of documents, however, is the great variability in the pay scales for different types of unit from different regions of the empire. Ordinary Mardaites in the naval *themata* receive 3 *nn.* campaign pay, as were the 'Slavs' recruited from the Opsikion district; whereas the soldiers from the Charpezikion district, whose salary was drawn from the income derived from the commuted service of part of the Thrakesion army, received only 2 *nn.* In contrast, and as we might expect, the soldiers of the cavalry *tagmata* received a vastly greater salary: in both the 911 documents and in those for 949, the *scholarioi* of the *tagmata* of Thrace and Macedonia, as well as of the pericic Hikanatoi and Exkoubitoi, received much greater sums, in addition to valuable *skaramaggia*, a well-established means of rewarding those in senior positions as well as those who were in attendance upon, or defended the person of the emperor.²⁵⁵ Although the numbers of officers is given in the case of the Thracian and Macedonian units, the numbers in each grade remains uncertain, so that exact rates are difficult to assess. Nevertheless, rates of some 2 or 3 times higher than the best-paid thematic contingents result, confirming the greatly superior position of these units.²⁵⁶

Yet there are also major differences between units of comparable type, differences which, as we will see below, reflect organisational and, probably, cultural variations. In the details for the 949 expedition, some units were paid in gold, others in silver: the reasons for the difference are not given, but it is possible that it reflected the demands of the soldiers themselves: possibly the Rus', for example.²⁵⁷ The senior officers of the Charpezikion *thema*, for example, are paid at a lower rate than those of the *thema* of Sebasteia; yet both are paid much lower rates again than the officers of the regular naval *themata*, whose *tourmarchai* and *drouggarioi* receive something like 3 and 2 times as much as their Armenian counterparts. Such variations appear to reflect social as well as administrative and organisational differences between the regions concerned, as well as the conditions under which the units in question will have been recruited and formed: the naval *themata* represented a part of the old, well-established military administrative system of the empire. The *themata* of Sebasteia and of Charpezikion, although not formed at the same time, nevertheless reflected a somewhat different social and cultural (i.e. Armenian) as well as geo-political context. Most significantly for our purposes, they suggest that it is risky to assume any uniformity across the empire's military-administrative organisation, in particular in respect of assuming standardisation of unit

255. Cf. *Three Treatises*, [C] 250-253: 501-511, and comm.

256. For a detailed discussion, see HALDON, *Byzantine Praetorians*, 308ff. (but note that the estimates for the Thrakesion thematic troops and others, at *De cer.* 655.16ff., are far too high, since I included in the estimate the extra, and unnecessary, *kennēnarion* for these troops added by the copyist into the manuscript, as well as for the Armenians of Platanion and Prine, at this point. See above, section 3. *The documents*).

257. See 667.19-20.

sizes, budgets and internal establishment (ratios of different classes of officer to men, etc.), and that each *thema* and region must, to a degree at least, be taken on its own terms, particularly where those units created from the beginning of the period of territorial expansion and reconquest and reorganisation of the frontier are concerned, that is to say, from the time of Basil I and afterwards.²⁵⁸

9. The question of numbers

i) General considerations

One of the most debated issues, and perhaps the most contentious, in the study of Byzantine military organisation is that of numbers. Opinions vary from the minimalist position, according to which the Byzantine army was much smaller than has usually been thought, and certainly much smaller than the reports of Arab geographers claimed to know;²⁵⁹ to the maximalist position, according to which the Arab reports are to be credited with quasi-official validity and to be taken more-or-less at face value,²⁶⁰ with a variety of intervening positions (although of a 'minimalist' tendency).²⁶¹ It is obvious that this is a major issue that cannot be treated in its entirety here, and which needs to be discussed in a longer-term historical perspective. I will try to outline some key points in this section.

Let us begin with the actual figures in our texts. Several very exact statements of numbers for particular units are given: thus we learn that in the 949 expedition, the whole peratic *tagma* of the *Exkoubiton* numbered 700, and that of the *Hikanatoi* 456 (666.8-13); that the whole of the *thema* of Charpezikion numbered 705 officers and men; and that some 800 soldiers of the Thrakesion *thema* paid up to 4 *nn.* each in lieu of military service. 600 Armenians based in the Thrakesion district were also available,

258. It is for this reason that I do not believe that a plausible breakdown of the total salary figures for the army, which are available from different periods of the empire's history in the late eighth-tenth centuries, can be achieved. Acceptable round figures can be adduced, as Treadgold (*State Finances*, and 'The Army', etc.) has attempted to do. But the entirely hypothetical standardisation of structures which one must impose upon the evidence in order to arrive at detailed figures for officers, men and specific units seems to me a dangerous and unconvincing approach. The evidence for variation and difference within military administrative structures which the sources reflect can only serve to reinforce this objection.

259. This point of view has been presented most recently in M. WHITLOW, *The Making of Orthodox Byzantium 600-1025*, London 1996, 181-183. Note also the figures for the Crusader forces given in R. C. SMALL, *Crusading warfare, 1097-1193*, ed. C. Marshall, Cambridge 1995, and the discussions of the size of a variety of medieval armies in H. DEBRUCK, *History of the art of war*, trans. W.J. Renfroe, Jr., Lincoln-London 1990, III: *Medieval Warfare*, 197-198; 218-220, which argue strongly, on the basis of the available evidence (which for crusader armies is often very clear), for smaller rather than larger numbers. The East Roman world constitutes no exception.

260. TREADGOLD, *Byzantium and its Army*, 43ff., where his earlier views are summarised and emended: see *Id.*, 'Notes'; and 'Remarks on Al-Jarmi', *BSI* 44, 1983, 205-212.

261. See CHYNTI, 'Les effectifs'. Further discussion: J.F. HADJON, 'Kudāma Ibn Djafar and the Garrison of Constantinople', *Byz.* 48, 1978, 78-90; *Id.*, *Byzantine Praetorians*, 629-633; WINKELMANN, 'Probleme der Informationen'. See also TRUDLOVE, 'The true size'.

although only 50 could be transported on the expedition. A further 869 cavalry soldiers, officers and men, were called up from the four *tagmata* based in Thrace and Macedonia. In addition, there were some 629 Rus' soldiers (incl. servants), 793 Dalmatians and unspecified prisoners (although originally 1,068 were intended), 1,000 recently-recruited Armenians in the eastern *tagmata*, 220 'Slay' soldiers from the Opsikion (although only 127 actually went), 150 officers and men from the Thrakesion *thema*, 3,000 Mardaites from the western *themata* of Nikopolis, the Peloponnese and Kephallenia. The total of regular soldiers from the non-naval provinces thus amounts to 8,352 who actually sailed, out of an original order for some 10,047.²⁶²

The naval troops and oarsmen of the *themata* were not all involved in the expedition, of course, many being detached on duties such as guarding Constantinople or the provincial coastline. Thus of the 19 vessels under the *strategos* of Samos, only 12, carrying some 1,548 men, accompanied the expedition to Crete. The 11 ships under the *strategos* of the Aegean Sea were detached to guard Constantinople or to cut the wood for the 8th induction; of the 25 units of the Kibyrrhaiot fleet, only 12 vessels, with some 1,560 men, went to Crete; while the Peloponnese sent 4 unspecified *chelandia*, perhaps bearing some 440 men. The total for the thematic fleet on the Cretan expedition therefore numbered 3,548 or slightly more. In addition, the various Mardaite flotillas were also involved — some 9 *galeai* from Attalia, for example, with crews of uncertain size (although certainly much smaller than the *dromones* and *chelandia* of the imperial and thematic fleets).²⁶³ Between 8,800 and 9,080 approximately (depending on the size of the crews of the different ships) for the imperial fleet were also involved.²⁶⁴ Given these uncertainties, the grand total for the expeditionary force thus will have amounted to some 20,700-21,000.

Only three of the figures given in this document tell us exact unit numbers for the imperial armies, however, and the question arises as to what extent the 800 men of the Thrakesion, for example, represent the full potential of that region, or merely a particular proportion called up for that particular expedition. It seems in fact more probable that the latter is the case, since the imperial administration decided to extract cash in lieu of actual service from this region, and thereby support the expenses for the Charpezikion army.²⁶⁵ Given the considerable distance from the home base of the latter

262. Thus the often-repeated idea that Asia Minor was stripped of troops for the 949 expedition is clearly incorrect. See, for example, *TIB* 2, 88; MAI AM 1, *Les îles*, 85.

263. See MAKRYPOULIAS, 'The Navy', 160-161.

264. The crews varied: 108 or 110 for an *ousiakon chelandion*, 120 or 150 for a *pamphylos* (both classified as *chelandia*), and 220 for a *dromon*: 664.19 - 665.13. In the 911 entries, the *pamphylos* carried 160 or 130, the *dromon* 230 plus 70 soldiers of the *tagmata* (see Table i), figures which, if applied to the ships of the imperial fleet in 949, for which no crew sizes are given, would increase the total for this part of the flotilla by several hundred. In 949 there were 60 imperial ships involved: 20 *dromones* with double crews of 220, 33 *ousiaka chelandia* with crews varying from 108-110, and 7 *pamphyloi* with crews of 120-150. See section 10, below.

265. 666.20 - 667.1 (Table ii, [14] B) (*Charpezikion* was paid 24 *litrai*, 56 *nn.*). The text notes that 800 men had their service commuted for a payment of 4 *nn.* each, resulting in a total of 41 *litrai*, 32 *nn.* (2,984 *nn.*). In fact, the figure of 4 *nn.* each from 800 men should amount to 44 *litrai*, 32 *nn.* (800 × 4 = 3,200 *nn.* + 72), so we must assume that, in the event, some of the registered *stratiotai* paid less. N. OIKONOMIDES, *Actes de Dionysion*, Archives de l'Athos IV, Paris 1968, 39, has already suggested that a lower

army from the western Anatolian coastline and the field of operations, this must have been because it was regarded as militarily more effective. And since the military condition of the Thrakesian soldiers will have been less important in this respect than their fiscal resources, the probability is that the bureau of the *stratiotikon*, which maintained the registers of those liable to the *strateia*, will have required the maximum to support the expedition. 800 registered soldiers (plus the 150 officers and their staffs) may well represent one of the *tourmai* of the Thrakesion, since we are told that the 600 mercenary Armenians were to guard the coast, and that there was a *tourmarchès* of the coast: the latter was presumably the commander of this body. This gives a total of some 1,500 officers and men for two possible *tourmai*, out of the four which are mentioned, a number approximately twice as great as that which can be derived for the (less wealthy) Peloponnese for the reign of Romanus I, based on the figure given for the rate of commutation of the *strateia*: between 1,500 and 2,000.²⁶⁶ The much smaller (and more recently established)²⁶⁷ Charpezikion theme, with less than half this strength, would fit in well with this picture. Such figures are supported by what we know from certain other sources.

A relatively small proportion of the regular thematic armies seems thus to have been involved in the expedition of 949. More important were the various units of mercenary or full-time soldiers: the 2,025 tagmatic cavalry from the pericatic region, Thrace and Macedonia; possibly the 600 Armenians in the Thrakesion along with the 220 Slavs in the Opsikion; the additional 1,000 Armenians recruited into the *tagmata* of the East; the 584 Rus' and their 45 servants; the 368 'prisoners' and 700 Dalmatians (*Toulmatzoi*), plus the 3,000 Mardaites recruited from the western *themata*, a total of 8,542 (although not all of those originally listed seem to have gone) as against the 705 soldiers from Charpezikion and the 150 Thrakesion officers and men who went, or the 3,548 thematic marines/oarsmen. The importance of units of the permanent

rate, of about 2 *mn.*, was paid by the less well-off registered holders of a *strateia*, on the basis of the fact that (i) a sum of 2 1/2*mn.* was exacted as the commutation of a property liable to the *strateia* in a mid-eleventh-century text (*Actes de Dionysios*, 1.13-14 and comm., 39); (ii) 5 *mn.* from those who could afford it and 5 *mn.* between two persons (i.e. 2 1/2*mn.* each) from the less well-off were demanded from the army of the Peloponnese under Romanus I ecumenius in lieu of military service in Lombardy (*De adm. imp.*, §51.199ff., 52.12-15); and (iii) 6 *mn.* was the sum payable 'for *exkoussia*' *per annum* per soldier from those who misappropriated the service of registered *stratiotai* in their own household or retinue (*Zetos*, i. Coll. iii. nov. viii [p. 226], of Constantine VII = N. Svoronos, *Les nouvelles des empereurs macédoniens concernant la terre et les stratiotai*, Athens 1994, no. 5, ii.3, ll. 149-157). Thus the rate at which the *strateia* could be commuted in the tenth and eleventh centuries varied from approximately 4 *mn.* to 6 *mn. per annum*, with a lower rate — 50% in the Peloponnesian case — being demanded from the indigent *stratiotai*.

266. The higher figure, which assumes a proportion of 1,120 poor to 880 better-off *stratiotai*, is preferred by Triadgotis, 'The army', 99, following A. Bon, *Le Péloponèse byzantin jusqu'en 1204*, Paris 1951, 115; the lower figure, assuming anything from 120-320 poor *stratiotai* is preferred by Oikonomidis, 'Social structure', 114f. Both seem possible. Oikonomidis, 'Social structure', 125, thinks that the Thrakesion, relatively wealthier than the Peloponnese, had fewer registered soldiers in 949 (i.e. 800 only), and explains this as a reflection in the decline in numbers of *stratiotai* as a result of the expansion of the 'powerful' from the 930s on. The Thrakesion cavalry in the 911 expedition numbered nominally 3,000, although only 1,000 seem actually to have been raised: see Table i, [12] B, D; and cf. [1] C and D.

267. Oikonomidis, *Listes*, 359; Id., 'Organisation', 287.

establishment (the *tagmata*, for example) and of those recruited for the duration of the expedition, is therefore relatively high when set against the thematic forces, whose main strength was in naval power, ships and men (the oarsmen were also classed as fighting men — *polemistai* — even though not always described as such, and presumably functioned as infantry troops).²⁶⁸

The size of the forces for the earlier expedition of 911, although somewhat greater, reinforces the general impression given by the later material. Thus the total of cavalry units amounted to 4,037, drawn from the *tagmata* in Macedonia and Thrace (1,037),²⁶⁹ as well as the cavalry of the Thrakesion region (1,000)²⁷⁰ and some 1,900–2,000 men drawn from the Armenians in the region of Sebasteia, Platanion (in the Anatolikon region) and Prine. If this is not the later Girapriño in the Pontus, it may be identified with Priene in the Thrakesion region, near Miletos.²⁷¹ In the latter case, these Armenians may be from the same units as those intended to accompany the expedition of 949, raised to defend the coastal districts of the Thrakesion (see 667.3–5). The imperial fleet consisted of 700 Rus' and some 19,600 oarsmen/soldiers; and the thematic forces numbered 17,540 (6,760 from the Kibyrrhaiot, 4,680 from Samos, 3,100 from Aigaion Pelagos and 3,000 from Hellas). In addition, 5,087 Mardaites from the western *themata* took part, making a grand total of 37,140 oarsmen and soldiers from the fleets. With the addition of the cavalry units, the Mardaites and the Rus', therefore, the army which sailed to recover Crete in 911 numbered some 46,964, a massive force some 26,000 greater than the army and fleets despatched in 949.

The difference in size is accounted for primarily in the far smaller involvement in 949 of the thematic fleets. Whereas in 911 they seem to have been almost totally committed to the campaign, it is clear from the details given in *document 4* that most of the thematic fleets were involved in a range of other duties. By the same token, although we have no definite total for the number of vessels and crews in the imperial fleet in 911, most of it seems to have been committed to the Cretan expedition, although a larger proportion of the vessels were *dromones*, with bigger crews, than in 949. Together, these figures account for most of the difference between the size of the two expeditionary forces: 37,140 in 911, a mere 12,628 in 949, most of the difference represented in the small number of thematic naval troops: 17,540 in 911 but only 3,548 in 949.²⁷² In addition, about 1,000 fewer tagmatic cavalry soldiers, and 2,000 fewer Mardaites, took part in 949.

268. See 670.4–5. The distinction made at 652.10–11; 16–17; 653.5–6; 10–11; 15–16 between *polemistai* and oarsmen is intended to distinguish between the regular fighting crew of the *dromones* in question and the tagmatic cavalry soldiers they are carrying. See *Naumachica*, 1.8, 1.9 (Leo imp.); 6.7 (Niceph., *Tact.* 54).

269. The adjective used of these *scholarii* is *Thrakésianor*; but since the establishment of tagmatic cavalry in Thrace is well-attested, whereas that for the Anatolian region of Thrakesion is not, the epithet *Thrakésianor* refers to Thracian, not Thrakesian: see AHRENS, 'Recherches', 30f.; KÜHN, *Byzantinische Armee*, 69 and n. 141; 93–94.

270. Although 3,000 Thrakesion soldiers are mentioned in the lists for salaries, the final total appears to exclude 2,000 of these, as does the original mention of the Thrakesion contingent of 1,000.

271. See note 50 above.

272. In giving such precise figures I am using the figures given in the text. In reality, it is unlikely that these were the exact numbers that participated, since factors of which we know nothing — illness, the presence of supernumeraries, and so on — must have affected the final figures, possibly quite substantially.

The expedition of 949 suffered from a lack of transport facilities, as the text clearly notes.²⁷³ This seems partly to have been due to the fact that so many thematic vessels were absent on other duties (21 of 59 listed vessels), and that the number of large *dromónes* seems to have been reduced relative to the number of smaller craft (of the 77 vessels available in 911, 42 were dromons able to transport up to 300 men; whereas in 949 there were no dromons at all on the Cretan detachments, a factor which alone would reduce carrying capacity by more than 50%). Even if one accepts the probability that the size of the thematic fleets in particular had been reduced since 911 — perhaps a direct result of the losses then incurred and not made good²⁷⁴ — the empire was in 949 no less able from the fiscal point of view to raise troops (by means of commuting the *strateia*, for example, and using the resources thereby generated to raise better-quality mercenary units). The smaller expeditionary force may, thus, not have been the result of reduced resources as such, but rather have reflected two different aspects of imperial policy: the shift in emphasis from large *dromón*-like vessels to the smaller *chelandia*; and a strategic decision which, I would hypothesise, was taken to limit the scale of the enterprise.

ii) *The size of the provincial and thematic armies*

That the forces assembled for these two expeditions were, nevertheless, unusually massive operations — particularly that of 911 — is clear when we compare the figures from other sources for military undertakings against the empire's northern and eastern neighbours. Throughout the history of the East Roman empire in the late ancient and medieval period, field armies were, in comparison with the expeditionary forces fielded by the later Republic and early empire, or with those raised by European states in the early modern period, really quite small. Partly, this reflected the availability of resources and the nature of the communications; partly, it reflected social organisational potential, in respect of how, under what conditions, and for how long, large numbers of the productive population could be engaged in military activities. In the sixth century, field forces of as much as 20,000 were considered large — the standard field force in the *Strategikon* of Maurice varies between 15,000 and 24,000²⁷⁵. Thereafter, and into the early seventh century at least, expeditionary forces seem to have been even smaller — forces of 5,000 - 6,000 were quite usual on the eastern front or in the Balkans.²⁷⁶ But using the limited and often ambiguous fifth- and sixth-century evidence is, of course, somewhat misleading for the period with which we are concerned. For while it is possible to arrive at some crude estimates of the numbers in the field forces, which became the thematic armies, from the sixth and into the seventh centuries, it is almost certain that

273. 663.13-15.

274. The total of thematic vessels in 911 was 77 (including 10 from Hellas, which *sensu stricto* was not a 'naval' theme); that in 949 was 59, without those of Hellas. Assuming at least 5 (there were 10 in 911) for this *thema*, the difference is 13. See the useful discussion of MAKYPOULIAS, 'The Navy', 157-158.

275. See C.M. MAZZUCCHI, 'Le KATAIPHAI dello Strategicon di Maurizio e lo schieramento di battaglia dell'esercito romano nel V/VI secolo', *Aerum* 55, 1981, 111-138, at 125ff.; and the comments of TUTTI, 'Grain Supply', 108-109, who stresses the relatively small size of late Roman and early Byzantine armies.

276. See the discussion in TURILLIOLI, 'The true size', esp. 220-221.

the structural transformations of the seventh century altered many of the relationships hitherto pertaining between infantry and cavalry, for example, and certainly between different arms within each of the latter. In addition, demographic changes and different modes of both recruitment and supplying armies must also have contributed, so that the figures which can be derived for the various armies of the *magistri militum* in the sixth and early seventh century are valid only partially for the following century, as I have suggested elsewhere. Although it is not possible to go into the issue in detail here, the issue of why armies — in both the Islamic as well as the Byzantine and western medieval worlds — were generally quite modest needs further discussion: easy solutions such as 'demographic decline' are hardly satisfactory, even if they were certainly contributory factors. Issues of logistics, the nature of road-building and maintenance, as well as costs relative to state revenues are all part of the picture, and deserve a detailed analysis.²⁷⁷

Figures from the eighth and ninth-century narrative histories are difficult to assess. Theophanes records that in 757 Constantine V marched into Cilicia with an army of 100,000; in 773 Constantine V mustered all the imperial forces, including the *tagmata* and their support unit the Optimates, a total of 80,000 men, for a defensive operation to defeat a Bulgar attack of some 12,000 men. In 778 Michael Iachanodrakon is reported to have marched against Germanikeia with an army of 100,000 from the themes of Thrakesion, Boukellarion, Armeniakon, Anatolikon, and Opsikion, and in 781 he purportedly led an army of 90,000 against Adata.²⁷⁸ Yet the same chronicle records that shortly thereafter the emperor raised a force of 12,000 cavalry and a fleet for a joint offensive into Bulgar territory. The former figure is certainly an exaggeration; the accuracy of the latter remains doubtful, even though more realistic, but can perhaps be taken as indicative of the order of magnitude of regular campaign armies at the time.²⁷⁹ Similarly inflated is the figure of 80,000 men supposedly in the army of Thomas the Slav in 821, which seems doubtful.²⁸⁰ More reasonable is the figure of 20,000 men raised by Constantine VI to oppose the Arabs in 797.²⁸¹

277. See the discussion in HALDON, *Byzantium in the Seventh Century*, 251ff.

278. THEOPH., 430.9-13; 447.19-21; THEOPH., 451.11f., and see L. ROCHOW, *Byzanz im 8. Jahrhundert in der Sicht des Theophanes*, BBA 57, Berlin 1991, 222f.; for the expedition of 781: ROCHOW, *ibid.*, 231.

279. THEOPH., 447.31f.

280. Thomas the Slav: TH. CONST., 55.22f.; GELIUS, ii, 5. Many descriptions of campaigns and battles involve the formulaic use of terms such as 'x myriads' (i.e. 10,000 x ?) for both sides, as at TH. CONST., 177.18-22 where opposing forces of 3 and 4 myriads are mentioned; it is difficult to know whether these are purely formulaic, or reflect the actual numbers involved.

281. THEOPH., 471.21-27; ROCHOW, *Byzanz* (cit. n. 277), 267. The figures vary wildly between and within texts. Skylitzes records that 4 myriads — 40,000 men — from the Thracian and Macedonian forces were mustered against the Arabs under Michael III; yet Leo the Deacon (viii, 4) notes that the whole imperial field army, including all the Balkan forces, numbered a grand total of 28,000 in 970-971. The same author notes that, when Nicephorus Phocas was absent recovering Crete in 961, the emir Sayf al-Daula was able to invade Asia Minor, in the expectation of meeting only token resistance. The *domestikos* of the West with the available European forces was sent by Romanus II to deal with the invasion (which he did successfully by ambushing the emir and routing his army as it traversed the passes back into Syria) (LEO DEAC., ii, 2-5). The story suggests that the imperial forces were severely stretched if they had to fight on more than one front, even at the height of the empire's military success and offensive strategy.

When the empire was able to muster all the thematic forces, then relatively large bodies of soldiers could, of course, be assembled. Thus the 40,000 troops ascribed to the army of Michael III in the 860s, drawn from many *themata*, is not unreasonable. At the battle of Poson in September 863 the general Petronas was able to bring three columns together to surround and defeat what the chroniclers clearly regard as a major Arab force, which is reported to have been some 40,000 in strength. This was a serious invasion on the Arabs' part, intended apparently to follow up the limited successes of previous years; and it was opposed by the combined forces of the themes of Armeniakon, Boukellarion, Koloneia and Paphlagonia, which approached from the north, of Anatolikon, Opsikion, Kappadokia, with the forces of the *kleisourarcheiai* of Seleukeia and Charsianon, which approached from the south, and the commander-in-chief, with the *tagmata* and the armies of Thrace, Macedonia and Thrakesion, from the west.²⁸² This was a very large undertaking, but it was planned and carried out within the few months between the invasion entering imperial territory (the Arab forces marched north through the Armeniakon region, sacking the town of Amisos on the Pontic coast) and September, illustrating the efficiency with which the imperial forces could be moved when required. The numbers of the imperial forces is uncertain; but if we assume that the strategy followed was that ordered by Leo IV in 779, whereby each *strategos* was ordered to select 3,000 elite troops to dog and harass the invading Arab army (a figure close to Leo VI's recommendation that the Anarolian *themata* should have a core cavalry force of 4,000 men each: see below), then the combined columns of 863 may have amounted to some 30,000-40,000 including the *tagmata*.

Yet even this figure can be challenged: when the *domestikos tōn scholōn* ordered the two commanders of the *themata* of Charsianon and Armeniakon to shadow the Paulician army along its route to Bathys Ryax in 878/9, they decided eventually upon a surprise dawn attack on the Paulician encampment, involving the two generals, at the head of an elite contingent of 600 soldiers, making the opening assault, followed by the rest of the thematic troops who were to charge down from the surrounding heights. That thematic commanders would open an assault against superior forces with 600 men does not suggest that the theme forces held in reserve were especially numerous, and supports the lower estimates for such forces preferred here.²⁸³

Such figures represent very large armies, and must have been enormously burdensome in terms of both supplies and arms and equipment on the population as well as the central treasury in respect of campaign payments and rewards. But there is no reason to think that, when we allow for the exaggeration and inflation typical of so much of the historiography, armies of the magnitude of 30,000 may not occasionally have been assembled, and reflected the greatest efforts made by the empire, involving

282. For Michael III: TH. CONST., 177.18-22; GENESIUS, iv. 14 (although the account seems to be borrowed from an earlier description of the battle of Dazimon in 838: see W. TRIADGOUD, 'The Chronological Accuracy of the Chronicle of Symeon the Logothete for the Years 813-845', DOP 33, 1979, 157-197, see 180ff.). For the battle of Poson: TH. CONST., 179.13 - 183.13, see esp. 181.11-20.

283. THIOPHI., 452.6-12. See R.-J. LIEU, *Die byzantinische Reaktion auf die Ausbreitung der Araber*, München 1976, 171-172; ROCHEW, *Byzanz* (cit. n. 278), 224-225. For the attack at Bathys Ryax: TH. CONST. (*Vita Bas. imp.*), 273.

forces from across all the *themata*: although it needs to be emphasised that such efforts must have occurred on a relatively infrequent basis.²⁸⁴

For even during the height of the Byzantine tenth-century offensive, 11,000-12,000 was regarded as an adequate field force.²⁸⁵ In the manuals of the reigns of Nicephorus II, John Tzimiskes and Basil II, dated to the 960s-980s, offensive campaigns against the empire's main foes in the Balkans and on the eastern front are described which require armies numbering no more than 12,000 - 18,000, with 25,000 as an absolute maximum, all of which involve both thematic forces from several regions as well as centrally-maintained tagmatic forces. Leo the Deacon regarded John Tzimiskes' army of 28,000 in 971 as extraordinarily large.²⁸⁶ One treatise warns that the emperor should not accompany the expedition if the cavalry force is fewer than 6,000, which suggests that this magnitude for a non-imperial offensive campaign army may have been entirely usual. And of these, the cataphracts which formed the core shock troops numbered a mere 500 or fewer.²⁸⁷ Defensive operations in Anatolia for the period before the 950s are described involving local forces of no more than 5,000 - 6,000 men.²⁸⁸ Frontier thematic armies were 'large' if they numbered 'up to three thousand men'; and while this applies to the frontier regions, it reflects conditions during the later ninth and first half of the tenth century, and thus the forces available to a standard provincial commander. Leo VI recommends to thematic commanders that a force of 4,000 selected soldiers — the *epilektos* of the *themata* of the regions concerned — should be employed in opposing Arab raiding armies.²⁸⁹

iii) *The evidence of the Arab geographers*

These low figures from a range of very practical eye-witness practitioners of tenth-century Byzantine tactics must represent the normal strengths of the forces usually available.²⁹⁰ But they are contradicted to a degree, and as is well-known, by two different sets of sources, the reports of the ninth- and early tenth-century Arab

²⁸⁴ See the discussion in LILLI, *op. cit.*, 330ff. Lille's view that armies of 100,000 men were by no means unusual (*ibid.*, 329 n. 107) assumes that the figures given in the various sources, Greek, Syriac and Arabic, are to be taken at face value. Yet in the same note the remark that armies of more than 20,000 were practically the norm reflects a more plausible view.

²⁸⁵ See *De re militari*, ed. Dennis, i, 1ff.; vi, 1ff., viii, 1ff. and this appears to have included the *tagmata* and at least one thematic army.

²⁸⁶ LEO DEACONI, 132,15-22.

²⁸⁷ *De re militari*, ed. Dennis, esp. viii; *Praecepta*, ed. McGee, i, 2; ii, 1ff.; iv, 1-9, ed. Kulakovskij, 1-2, 7, 9, 12ff. The *Praecepta* specifies a maximum formation of just over 500 for a large wedge, only two-thirds of whom would be real *klibanarioi/kataphraktoi*, the rest consisting of more lightly armed mounted archers. Since this description is intended to apply to the main field army operating in the East at any given time, this provides some perspective on the numbers involved: *Praecepta*, iii, 1-11.

²⁸⁸ Cf. the treatise on skirmishing warfare, known as *De velitatione*, xiv, 4; xvi, 4; xix, 2, ed. Dennis, 192, 203, 215.

²⁸⁹ *De velitatione*, xvi, 4,35-39, ed. Dennis, 201; LEO, *Tact.*, xvii, 143ff. See the discussion, with references to the Arab sources also, in DAGRON, MELLINET, *Le traité sur la Guérilla*, 181ff. For *epilektos*, see 184-185.

²⁹⁰ Similarly relatively low figures for Arab raiding forces are attested for the tenth century: see CHYKET, 'Les esférants', 329-330.

geographers, on the one hand; and, sometimes but not always, by the figures recorded in the Byzantine histories and chronicles of the period. Is it possible to reconcile the two sets of information?

Let us review the information transmitted by the Arab geographers. There are four reports, all of which derive at least in part from information written down by a certain Muslim b. Abi Muslim al-Djarmi, a Muslim prisoner before 845, whose report was written in the period from the 830s to 846.²⁹¹ It has been argued that the latter had access to an official Byzantine source listing the numbers in each *thema*, together with other information on provincial military and fiscal organisation;²⁹² but unfortunately al-Djarmi's account does not survive, so that we must rely on the later versions. In the earliest of these, that written by Ibn Khurradadhbih in 846 (and slightly revised in 885), the references to numbers of soldiers, their pay and to Constantinople follow after the reference to al-Djarmi and the list of provinces derived from him, and mark a new section in the manuscript, suggesting that this material, contrary to the opinion that all this information derives from a single source, actually derives from further, unknown sources.²⁹³ But the work of the ninth-century geographer Ibn Khurradadhbih seems to be the most faithful version of al-Djarmi.²⁹⁴ Three later geographers included material from al-Djarmi also, but — like Ibn Khurradadhbih — seem to have added material from other sources also, so that their reports differ, sometimes importantly, from that incorporated into the work of Ibn Khurradadhbih.²⁹⁵ On the other hand, there are enough similarities to give a fairly accurate idea of how Arab commentators of the later ninth and tenth centuries envisaged the military structures of the East Roman state. Although they provide important evidence for the administrative and provincial structures of the empire, we are concerned here with the numbers they attribute to the *themata*, and I will restrict my remarks at this juncture to that issue.

Five categories of information are offered: on the total numbers in the Byzantine armies; on the names and strengths of the provinces and their armies; on Constantinople and its garrison, and/or the imperial household; and on the tactical

291. See E.W. BROOKS, 'Arabic Lists of Byzantine Themes', *JHS* 21, 1901, 67-77; and MIQUET, *Géographie* I, XVIII. For discussion of the relationship between the three texts, and with important emendations to the conclusions reached by Brooks, see WINKELMANN, 'Probleme der Informationen'.

292. See TRIADGOLD, *Byzantium and its Army*, 64ff., and 'The Army', 85f. (with reference to his previous discussions), who has made the strongest representations on behalf of the accuracy and reliability of the Arab geographers' accounts.

293. WINKELMANN, 'Probleme der Informationen', 18-19, 26-27.

294. WINKELMANN, 'Probleme der Informationen', 25. See ABU 'I-KASIM 'ABD ALLAH b. 'ABD AL-MUT'A, KHIURRADADHBH, *Kitab al-Masalik wa'l-Manahik*, in *BGA* VI, 76-85, written in 846 and revised in 885 (see MIQUET, *Géographie* I, XXI; II, 391ff.).

295. The three later works are by Ibn al-Faqih and Qudama ibn Dja'far. IBN AL-FAQIH AL-HAMADANI, *Description of the Land of the Byzantines*, II. Brooks, in 'Arabic Lists of Byzantine Themes', *JHS* 21, 1901, 72-77 (written in 903; see MIQUET, *Géographie* I, XXII); and ABU 'I-FARADJ AL-KAIBIB AL-BAGHDADI QUDAMA IBN DJA'FAR, *Kitab al-Baradi wa sinat al-Kitab*, in *BGA* VI, 196-199 (written in 928-932; see MIQUET, *Géographie* I, XXVIII). Equally valuable a source is the *Kitab al-Tanbih w-al-Ishraf* of al-Mas'udi, written in the middle of the tenth century, also using al-Djarmi, but with several other traditions represented (*Macouly, Le livre de l'avertissement et de la révision*, trad. B. Carra de Vaux, Paris 1897; for the date see MIQUET, *Géographie*, I, XXIX).

structure of the armies, and the pay of the soldiers. On the first issue, Ibn Khurradadhbih gives a total of 120,000 men, but no strengths for the individual provinces. In contrast, Ibn al-Faqih and Qudama give the numbers of the soldiers for each province, although there are some gaps in their information; while also notes that the strength of the eleven Asia Minor *themata* amounts to 70,000 men. The order in which the provinces appear is the same in the first three descriptions until the eighth; thereafter, Ibn al-Faqih and Qudama diverge slightly from Ibn Khurradadhbih. The lists include the district around Constantinople as their first province; thereafter, whereas Ibn Khurradadhbih gives a brief description of each, together with the number of its fortresses and sometimes the situation of a particular town, Ibn al-Faqih and Qudama give also the seat of the *stratēgos* and the number of soldiers in each region. But they do not always agree on the latter details, and the strengths of the *themata* appear as follows:

	Ibn al-Faqih	Qudama
(1.	the district of Constantinople, rendered as Talaya/Tafla)	
2.	Thrace	5,000
3.	Macedonia	5,000
4.	Paphlagonia	5,000
5.	Oprinatōn	4,000
6.	Opsikion	6,000
7.	Thrakesion	10,000
8.	Anatolikon	15,000
9.	Seleukeia	no figure
10.	Kappadokia	4,000
11.	Charsianon	4,000
12.	Boukellariōn	8,000
13.	Armeniakon	9,000
14.	Chaldia	10,000

The discrepancies between the two sets of figures are significant in respect of the Ms. tradition, although the result for the value of the information about numbers of provincial soldiers is less problematic. The manuscript of Qudama has a lacuna for both Macedonia and Paphlagonia. Since the sum of the eleven Asiatic districts is given by Qudama as 70,000, and the sum of the Anatolian districts without Paphlagonia is, according to the individual figures he gives, 60,000, a strength of 10,000 has been assumed for this province.²⁹⁶ In the case of the discrepancy between the two figures for the Thrakesion, this has been explained as a scribal or copyist's error in the case of the Qudama manuscript, in that the figure for the preceding district of Opsikion must have been mistakenly repeated. But Winkelmann has noted that this seems unlikely, given the fact that the two entries are separated by a block of text, and that the numbers 6,000 and 10,000 cannot be confused either numerically or in words. A more likely

296. QUADAMA, 199. DE GOLI, BGA vi, Arabic text, 207 n. 1, arrives at this conclusion, although his arithmetic is incorrect; see WINKELMANN, 'Probleme der Informationen', 21.

explanation lies in the different sources used by the two (thus challenging the assumption that all depend on al-Djarmi alone for their figures).²⁹⁷ Similarly, the discrepancy between Qudama's figure for the Armeniakon (4,000) and that given by Ibn al-Faqih (9,000) has been explained as an oversight by which the copyist for the Qudama text mistakenly wrote in the figure for the following *thema*, Chaldia; while that between the figures for Chaldia (Qudama: 4,000, Ibn al-Faqih: 10,000) is similarly explained as a mistake of the copyist of the Ibn al-Faqih manuscript, who wrote in the figure for the Thrakesion district instead of the 'correct' figure given by al-Djarmi. This is even more implausible an explanation for the error than for that regarding the Thakesion district itself or for the Armeniakon, given the considerable body of text between the two entries concerned, and is again a result of the assumption that both Qudama and Ibn al-Faqih must have derived this information from the same single source, al-Djarmi.²⁹⁸ Yet it is likely that the Qudama manuscript does contain an error in the case of the Armeniakon, and indeed, by assuming a mistake here whereby the entry should have read 9,000 (as with Ibn al-Faqih) we can also emend the entry for Paphlagonia to 5,000 rather than 10,000, thus arriving at the figure of 70,000 which Qudama gives for the sum of the troops in the eleven Anarolian regions, and obtaining agreement for the entry for Paphlagonia in Qudama with that in Ibn al-Faqih.

None of this is to suggest that the information given by the three writers, or by al-Djarmi, must be entirely inaccurate or unusable.²⁹⁹ On the contrary, as has been stressed elsewhere, it is to note the problematic nature of the relationship between the three texts, the fact that the dependency of the later texts on Ibn Khurradadhbih, and even more so on the putative contents of al-Djarmi, should not be taken for granted, and to beware of undue editorial interventions to force the text to fit in with one's hypotheses.

For the Arab sources do indeed vary substantially in some cases, to the extent that simply emending the text will not conceal the difficulties this presents. The information incorporated by all three writers reflects a date in the late 830s or early 840s: there is some disagreement about the status of Kappadokia in the almost contemporary *Taktikon Uspenskij*. But the latter does show that the list of Anarolian provinces given by the Arab writers is accurate for those years, including the details given by the texts that Seleukeia, Charsianon and Kappadokia were *kleisourai*.³⁰⁰ Ibn al-Faqih notes that the fourteen provinces listed are the known land provinces, thus illustrating the fact that his source did not include the remaining districts in the West, nor indeed the 'maritime' districts in Asia Minor: no reference to the regions of Peloponnes (a *thema* from at least

297. See TREADGOLD, 'Notes', 271 n. 9; but see WINKELMANN, 'Probleme der Informationen', 22.

298. TREADGOLD, *loc.cit.*; WINKELMANN, 'Probleme der Informationen', 23-24.

299. This is the oft-repeated claim attributed by Treadgold to those who have voiced such circumspection: see his 'The Army', 81-84; *Byzantium and its Army*, 3-6, for example. In fact, none of those thus categorised (Winkelmann, Lilié, Kaegi, Haldon) have dismissed the figures as such, merely stressing that a naive reading of the figures which glosses over the problems they contain in an attempt to create a rational and coherent structure based on modern notions of how armies should be organised is not a sufficiently critical foundation for a plausible analysis.

300. For these three districts, see IBN KHURRADADHBHIB, 80; IBN AL-FAQIH, 75; QUADAMA, 198; and OIKONOMIDES, *Listes*, 348, 350. On Kappadokia, see also OIKONOMIDES, *Listes*, 48 n. 24.

812), Hellas (later seventh century), Sicily (ca. 700), Kephallonia (by 809), Thessaloniki (probably from the 820s), Dyrrahachion (probably from the 830s), Crete (mid-eighth century), the Kibyrrhaiotai (early eighth century) or the Klimara (in the Crimea; established in the early 830s). Nor is reference made to the maritime district of the Aegean Sea (established ca. 843).³⁰¹ But while the accuracy of the information on the Asia Minor districts, if not its completeness, in the 840s is not in doubt, the contradictions in the figures of the troops from each area remain a problem.

As noted already, Ibn Khurradadhbih gives an overall figure of 120,000, and Qudama quotes 70,000 for the 11 Anatolian *themata* he lists. On the assumption that the districts not listed, together with the imperial *tagmata* at Constantinople, made up the missing 50,000, the first figure has been taken as indicative of the total strength of the armies in the middle of the ninth century. The figure of 40,000 cavalry for the whole empire, offered by al-Yaqubi, may be compatible with these, if we assume that there were a further 80,000 infantry in the armies, and this has indeed been done. But the common assumption that the proportion between infantry and mounted soldiers was in the order of 2: or 3:1 may not in fact be a particularly sound basis for further calculations or guesswork, and may well have varied considerably from region to region.³⁰² Using the figures of the Arab geographers, it is possible to suggest a total figure for the imperial armies based on the information they give. But the relative merit of the varied information from the Byzantine and non-Byzantine sources needs then to be considered in a broader context.

iv) Registered or active soldiers?

The *Tactica* of the emperor Leo VI points to a possible resolution of the issue. Leo states that, while the exact numbers of the imperial thematic armies must not be revealed (for security reasons, he claims),³⁰³ the thematic *stratégoi* had under them forces ranging from 9,000 - 10,000 men, and not exceeding 18,000.³⁰⁴ An army of 5,000 or less was clearly a possibility; an army of from 10 - 12,000 was, according to Leo, a medium-sized force.³⁰⁵ But he then goes on to point out that the *thema* in the sense of *army* should be made up of just 4,000 soldiers (cavalry), organised in 20 *banda* of 200 men, an ideal schema, no doubt, but indicative nevertheless both of Leo's assumptions and about the actual realistic (maximum) size of the effective fighting element of a thematic army. This figure is borne out by other remarks, as we have seen, which represent as large a thematic cavalry force of 'up to 3,000 men'.³⁰⁶ Calling upon

³⁰¹ For the first references to these commands see OIKONOMIDES, *Listes*, 348-353; and the detailed analysis of references to the eighth- and ninth-century provinces in F. WINKELMANN, *Byzantinische Rang- und Verstruktur im 8. und 9. Jahrhundert*, Berliner Byzantinische Arbeiten 53, Berlin 1985, 72ff.

³⁰² See, for example, HINDY, *Studies*, 181-182; TRENDLE, *State Finances*, 15-19, 29ff., 116f. and ib., *Suppl.*, 252f.

³⁰³ *Tact.*, vii, 41; xii, 73.

³⁰⁴ *Tact.*, iv, 41-45 (no *drouggos* to be greater than 3,000 and no *tourma* greater than 6,000. The army *stratégos* should consist of three *tourmai*)

³⁰⁵ *Tact.*, xii, 32; 33.

³⁰⁶ *Tact.*, xix, 149, with the foregoing sections 143-148.

the forces at the disposal of neighbouring theme commanders enabled the general to increase his forces when faced by heavier odds;³⁰⁷ and to assemble a really large force all the *stratēgoi* of the East could be called upon. In this case, each should select their own 4,000 *epilektōi*, separating the able from the less able, a necessity, adds Leo, due to the present reduction in numbers, unreadiness and indifference of the soldiers. By these means, an army of something over 30,000 can be raised.³⁰⁸ Leo is clear that this is a notional maximum: the actual number of the forces which could thus be assembled was probably less than this, given that many *themata* were quite small and would not have been easily able to raise as many as 4,000. And if this is meant to represent all the cavalry forces of the Anatolian *themata* (and possibly those of Thrace and Macedonia, which counted as 'eastern' *themata*³⁰⁹), then the overall sum of the empire's cavalry forces was clearly not as large as some have thought.

In this connection, we might recall the later ninth-century report of al-Ya'qubi, who notes that the total of cavalry in the empire amounted to 40,000, and who notes also the very great difference in numbers between smaller and larger *themata* such as Charsianon, on the one hand, and Thrace or Macedonia, on the other; and that of the tenth-century Hudud al-'Alam, that each commander disposes of from 3,000 - 6,000 troops. Whether exaggerated or not, the two figures, whatever their derivation, provide a rough idea of the strength of provincial forces in the period.³¹⁰ The mid- to late tenth-century *Sylloge Tacticorum* remarks that the basic cavalry unit, the *bandon*, by this time known also as an *allagion*, numbered 50, but that anything up to 400 was a possibility, especially for infantry. The writer then notes that the commonplace (i.e. thematic) units — *banda* — number anything from 50 to 150, whereas the 'imperial' *allagia* can be as large as 320 or 350 or at most 400 in strength, 'such as the present unit of the Thrakesion, numbering 320, or that of Charsianon, numbering from 300 - 400'; while some of the western *tagmata* number 400 also. This latter information clearly refers to units raised and paid on a full-time basis, the regional as well as the imperial *tagmata* based in the various provinces of the empire, rather than to the traditional thematic cavalry.³¹¹

It must immediately be apparent from this brief survey that attempts to calculate total numbers of the imperial forces on the basis of assumptions about the uniformity of numbers for different types of unit — *banda*, *drouggoi* and *tourmai* — are doomed to failure, since it is clear that unit sizes varied enormously from region to region. Not only that, but it is equally apparent that, except in the case of units raised and maintained on

307. *Tact.*, xix, 150.

308. *Tact.*, xix, 153.

309. See TH. CONI, 181, which notes that the armies of Thrace and Macedonia usually fought alongside the eastern *themata* when they were not needed on the Balkan front. See further discussion in H. NIM, *Studies*, 650f.

310. AL-YĀQUBI, *Kitab al-Buldan Le livre des pays*, tr. G. Wiet, Cairo 1937, 168 (text in *BGA*, vii, 232), who notes that Charsianon provides 500 cavalry whereas Thrace and Macedonia each provide 5,000. The text was compiled ca. 889 A.D. It is highly likely that the latter figure includes also the *tagmata* based there. See also *Hudud al-'Alam, The Regions of the World*, trans. V. Minorsky, Oxford 1937, revised edn. C. Bosworth, London 1970, 157.

311. *Syll. Tact.* 35, 4-5. For these regional *tagmata*, see KUTIN, *Byzantinische Armee*, 251-259, with 123-124.

a permanent basis, such as the four or more imperial *tagmata* at and around Constantinople or in the adjacent provinces,³¹² unit sizes were varied according to tactical need: Leo's *Tactica* is very clear on this, suggesting that this be done not only to conceal numbers from the enemy, but to meet the tactical requirements of each specific situation. The size of units was left to the discretion of the commander in the field.³¹³

This is very important. For it thus appears that there was not necessarily any near equation between *bandon* and *tourma* as territorial and administrative districts, on the one hand, and the same terms applied to tactical bodies of soldiers, on the other. The commander of the army in the field could organise his troops into whatever divisions he felt appropriate, either to the march, the camp, or the battle. Individual administrative *tourmai* could thus be brigaded together on campaign or in battle to make up a larger tactical *tourma* (and, conversely, large administrative *tourmai* might be broken up into smaller units), for example, so that tactical units or divisions may well not have overlapped exactly with the administrative districts from which the soldiers had actually been raised. This is why Leo states that the general should try to retain the cohesion of the units by keeping men from the same communities and districts together, thus retaining some local identities and solidarity.³¹⁴ He was responsible for appointing the officers in charge of such divisions in the field for each campaigning season. This does not mean that such appointments were random or that no continuity existed: the fact that a body of officers, ranked by experience and status, whose position was embodied in the system of titles and precedence derived from the imperial court, is adequate proof of this. There is also some incidental hagiographical evidence to illustrate the point. The *drouggarios* Nikephoros was posted from his home at Kamarai in Thrace, where he had probably been the local commander, and promoted to command the *tourma* of Bizye, for example, when war with the Bulgars threatened in the 890s, and his family accompanied him. His son, who began at a fairly humble level, was later promoted to the position of *drouggarios*.³¹⁵

Because a *thema* might have three *toumarchai*, in consequence,³¹⁶ must nor mean either that they consisted of an equal number of smaller units, nor that they were the

312. Which also varied considerably in size, and which probably varied individually over time also: cf. the 456 soldiers for the whole *tagma* of the Hikanatoi with 700 for the Exkoubiton in 949; and see HALDON, *Byzantine Praetorians*, 280-282.

313. E.g. *Iact.*, iv, 38; 41; 45; 47; 48; 63.

314. *Tact.*, iv, 39; with iv, 38 and 40. The *bandon* as a territorial sub-division of a *thema* must go back to the seventh century, when the field armies of the various *magistri militum* were withdrawn into Asia Minor and distributed, according to a scheme carefully worked out in respect of the ability of the territory across which the units were based to support them. Although there is no specific evidence, the *bandon* had clearly been the basic administrative district within each *tourma* in the *themata* as can be seen in a number of territorial transfers from one *thema* to another in the time of Leo VI; see *De adm. imp.* §50.83-132. See below.

315. Baanes thus followed in his father's footsteps as a local *drouggarios* in the provincial army; see *De S. Maria iun.* (in AASS *Nov.*, iv, 692-705). For a possible seal of Nikephoros: NISBET, OIKONOMIDES, *DOSSeals* I, no. 74.1, and comm., p. 170 (9th-10th c. seal of Nikephoros, imperial *spatharokandidatos* and *toumarches* of Bizye).

316. In theory, as will become clear, the number of sub-divisions could vary very considerably from region to region.

same size as the *tourmai* in a different *thema*. This is quite evident in the report of the territorial transfers of *banda* included in chapter 50 of the *De administrando imperio*.³¹⁷ To assume that the number of administrative *banda* in a *thema* necessarily reflected a particular number of soldiers or the strength of the thematic forces from that province at all is somewhat risky. There may well have been some consonance between the two in the first phase of thematic development — during the second half of the seventh century, perhaps (although even this is pure supposition) — but localisation of recruitment, demographic changes, settlement pattern and fluctuations in resource availability will have transformed the original situation. This is obvious if we bear in mind that the abilities and skills, as well as the relative wealth and readiness for service, would have evolved over the two centuries from ca. 650 to ca. 850 and come to vary across each such district. Thus the number of infantry or cavalry soldiers needed for the tactical units — *banda* — could only rarely have matched the number of soldiers of the same type — infantry or cavalry — registered or available from each administrative *bandon* or *topotérésia*. This insight throws a somewhat different light on the testimony of the Arab geographers, of course, and it clearly has implications for how we understand their interpretation of Byzantine military organisation. It also helps to explain why new tactical and strategic command structures — such as the *chiliarchia* and the *doukaton* — began to evolve in the middle years of the tenth century.

In the first place, the variation in the numbers for different types of tactical unit — between 200 and 400 for a *bandon*, for example — given in Leo's *Tactica* suggest that the neat thematic command and tactical structures outlined there (and, as we shall see, a variant thereof in the Arab geographers' accounts) varied in their practical application from area to area of the empire very considerably.

In the second place, whereas al-Ya'qubi, whose account was written ca. 889, gives each of Charsianon and Seleucia 500 cavalry soldiers, and 5,000 to each of Thrace and Macedonia, his information disagrees radically with the information in Ibn al-Faqih and Qudama for the first two, but accords with their information on the last.³¹⁸ Are we entitled to emend al-Ya'qubi because some of his figures disagree with those of the other two writers, or should we distrust the figures given by Ibn al-Faqih and Qudama? In the light of the information from the Byzantine sources referred to already, this seems a dangerous step. Or should we assume that the overwhelming majority of the forces of Charsianon and Seleucia were infantry, since al-Ya'qubi notes that the total of the Roman *cavalry* amounts to 40,000? In which case, while 4,000 names may have been reported for the military register for Charsianon, the effective cavalry force amounted to 500 or so. But this also seems rather an unlikely ratio, especially in such relatively small districts. What al-Ya'qubi's examples do suggest is that the size of the available forces in the different *themata* probably varied much more dramatically than the lists of Ibn al-Faqih and Qudama would allow. This impression is strengthened by the advice in the

317. Thus the new *tourma* of the *Kommata* in Kappadokia consisted of seven *banda*; the new *tourma* of Saniana in the *thema* of Charsianon consisted of three *banda*: *De adm. imp.* §50, 92–100, 101–105.

318. *BGA* vii, 232.

Tactica of Leo, that the *stratēgos* should select a force of 4,000 to meet the needs of local defence, and that similar forces should be established in neighbouring *themata*; for such numbers were clearly not available in districts such as Charsianon and Seleukeia. And, by the time we reach the expeditions of 911 and 949 in particular, we see a much more varied picture of regional structures than any of the evidence treated above would suggest.

In the third place, it seems particularly worth emphasising the fact that it is, according to Ibn Khurraqadibh, the military rolls which contain 120,000 men, which is not quite the same as saying that there are 120,000 active soldiers in the armies.³¹⁹ Indeed, it is very clear from the Byzantine sources that field armies were selected from the thematic registers, and that the selection, made by local officials under the authority of the *stratēgos* (at least from the later ninth century), depended upon a whole range of factors — the soldiers' ability to maintain themselves, their fitness and willingness for duty, and the requirements of the military undertaking in question, the various types of service required, and so on.³²⁰ As we have seen, Leo distinguishes clearly between the *epilektōi* — whom he calls 'the so-called military *thema*' — and the rest, which he refers to as the *andrapodōdēs stratos*, the 'servile/common army'. In the same paragraph he also regrets the decline in the number of registered soldiers who were actually able and fit for active service;³²¹ and elsewhere he notes that less well-off but willing soldiers should be supported through the commutation of service of those in the *thema* who were well-off but unwilling.³²² He also adds that they should be assigned to 'other duties'.³²³ Later writers assume a similar differentiation.³²⁴ This distinction is additional to that which had always existed in the provincial armies, between the standing and more professional contingents in the *themata*, and those elements which took on a more 'militia-like' aspect over the period from the middle of the seventh century and after, a distinction generally recognised by historians. Such 'standing' contingents are referred to in the sources as the *taxatoi* of the themes, sometimes further qualified as *epilektōi*, and usually appear as small selected units of soldiers — just as ate those described by the *Tactica* of Leo VI.³²⁵ The practical difference between the able and the less able or unwilling is probably not an entirely new development;³²⁶ yet it becomes particularly apparent in

319. IBN KHURRAQADIBH, 84.

320. See LEO, *Tact.*, iv, 1; Epilog., 57; cf. AHRWILHE, 'Recherches', 14; and G. DAGRON, 'Byzance et le modèle islamique au XI^e siècle: à propos des constitutions tactiques de l'empereur Léon VI', *CRAI* 1983, 219-242, see 234 and n. 69.

321. LEO, *Tact.*, xvii, 145; 149.

322. LEO, *Tact.*, xviii, 129; xx, 205.

323. LEO, *Tact.*, xviii, 149.

324. See *Præcepta*, 5.17; 20; 16.34 for the *chydatos laos*; and cf. DAGRON, MIFIÈS, *Le traité sur la Guérilla*, 184.

325. See the useful brief discussion with sources and previous literature in M. GRIGORIOU-IOANNIDOU, 'Un problème de l'institution des thèmes pendant les X^e et XI^e siècles', *Byz. Forsch.* 19, 1993, 35-41.

326. It probably goes back to the very beginnings of the process of localisation and provincialisation of the armies in the seventh century: see HALDON, 'Military Service', 24f.

the figures which can be extrapolated from the documents dealing with the commutation of military service for a fixed rate applied to the *themata* of the Peloponnese in the 920s (?) and to the Thrakesion in 949 (see the discussion above), especially illustrative in the latter case, where the revenue thus raised paid the whole thematic salary of the smaller Charpezikion theme.

In view of these varied and apparently contradictory figures, it seems reasonable to suggest that the high total given by the Arab geographers actually represent — as is indeed clearly implied by Ibn Khurradabbihi — the notional number of soldiers registered on the *kôdikes* in the military *logothesion* in Constantinople and in the *themata*, whereas the lower figures — with some exceptions, no doubt — should be taken as indicative of the order of magnitude which Byzantines themselves expected to be able to field. It is worth noting that a (possibly) ninth-century Arabic military treatise describes armies of different strengths which might be fielded by the Muslims: the *Brief policy of war*, attributed to a certain Harthama b. A'yan, notes that armies may consist of from 800 men to 12,000. A force of up to 4,000 men counts as adequate for most expeditions, while more than 12,000 is regarded as very large; a recommended army numbers 4,000 or, for major expedition, 12,000. Such information fits in well what is known about the Byzantine armies of the same period.³²⁷

That there was in practice a discrepancy between the active and able fighting force in each *thema* and the numbers of names or households registered as *stratiotikoi oikoi* is very clear from the evidence alluded to above. Certainly for the later ninth and tenth centuries, this is plausibly explained by the decline in the ability of many of the registered *stratiotai* actually to carry out their obligations, always a problem for some families or soldiers, but exacerbated in the context of the changing social-economic conditions of the Byzantine rural population at this period.³²⁸ The increasingly clear differentiation between the *stratiotai*, referring to those subject to the *strateia*, and *strateuomenoi*, those who actually fought, which becomes explicit in the legislation of the 930s and after, appears already in Leo's *Tactica*.³²⁹ A single individual, registered for the *strateia*, and who also fulfilled his service personally, would still be correctly described by both or either of these terms, of course; but the evidence points to a frequent distinction in practice between the two. The *epilektai* in the *Tactica* will have been made up not only of those well able to support themselves, but increasingly of more professional soldiers supported by *stratiotai* registered in *stratiotikoi oikoi*, military households, and subject to the *strateia* in the fullest sense, a fiscal as well as a personal burden.³³⁰ The geographers may well have had information about the list of registered *stratiotai*, and if this was the case, it would say little about how many actively-serving

327. HARTHAMA b. A'YAN, *Mukhtasar Siyâsat al-Harb* (*The Brief policy of war*), ed. 'Abd al-R'uf 'Aun (Cairo, n.d.), 28.

328. A point emphasised by OIKONOMIDES, 'Social structure', 125f.

329. *Tact.*, xviii, 129.

330. For further discussion and sources, see DAGRON, MILAISCU, *Le traité sur la Guérilla*, 184-190.

soldiers were actually supported in each *thema*. Viewed from this perspective, it is possible to reconcile the conflicting reports and numbers which appear in the texts we have discussed so far.

v) *The evidence of tactical command structures (tourmai, drouggoi, banda) and the drouggarokomètes*

The Arab geographers also give some valuable information about the command structure of the Byzantine forces, at least in its ideal form, for the period from which the information appears to derive, i.e. the middle of the ninth century, which casts further light on the question of numbers and how we may interpret the figures given in the various texts noted so far. Ibn Khurradadhbih describes the command structure as follows:

"the *patrikios* commands 10,000 men; he has two turmarchs under his command, commanding 5,000 men each; each turmarch has under his orders 5 drungars in charge of 1,000 men each; under the command of each drungar are 5 *komètes* in charge of 200 men each; each *komès* commands 5 kentarchs with 40 men each, and each kentarch has under his command 4 dekarchs with 10 men each."

The same description is given by Qudama, and it is worth highlighting immediately the possibly forced element in the figure, given that Ibn Khurradadhbih has already asserted that there are 'always' twelve *patrikioi* in the Roman state (six at court, six in the provinces). Whether this information was tailored to reflect the fact that he had an overall figure of 120,000 soldiers on the military rolls, or vice versa, is uncertain. Either way, and given the incorporation into his account of an archaic list of *patrikioi*, there must be some doubt as to his reliability.³³¹ And his figures certainly vary somewhat from those given in the *Tactica* of Leo VI in which the chain of command for a *thema* of 4,000 cavalry is described: this was divided into 2 *tourmai* of 2,000 men, each consisting of 2 *drouggoi* or chiliarchies of 1,000, subdivided into 5 units of 200 men under *komètes* (*banda*), each *bandon* consisting of 2 groups of 100 under *kentarchai*, further grouped into units of 50, 10 and 5.³³²

Nevertheless, apart from the size of the *tourmai*, and of the units under the *kentarchoi*, the two descriptions are close. And the tactical structure is itself not to be doubted — *thema*, *tourmai*, *drouggoi*, *banda* and their commanders are all attested in the sigillographic record as well as in literary accounts, the last two from the sixth century and before as popular expressions for different types of unit.³³³ Yet it

331. IBN KHURRADADHBHI, 84; QUADAMA, 196. For the twelve *patrikioi*, see IBN KHURRADADHBHI, 80-81. The archaic list is as follows: the *patrikios* of Amorion, the *patrikios* of Ankara, the *patrikios* of Armeniakon, the *patrikios* of Thrace, the *patrikios* of Sicily, the *patrikios* of Sardinia. For discussion, see OIKONOMIDES, 'Une liste arabe des stratégies byzantins du VIII^e siècle et les origines du Thème de Sicile', RSBN 11, 1964, 121-130.

332. *Tact.*, xix, 149.

333. Thus the late sixth-century *Strategikon*, which presents a schema in which the army is divided into brigades, or *motrai* and divisions or *meré*, regularly uses *drouggoi* for both when drawn up in non-linear formation (i, 3 6; ii, 1.6; ii, 2.1; xii, 8.20/7-8). The first reference to a *tournarchès* is for 626/7 (TIIOMI, 325.3); George, *tournarchès tōn Armeniakōn*; the first reference to a *drouggarios* is to Theodosios, the *megaloprestatos drouggarios*, who accompanied the *magister militum* Elias on an embassy to the Persian king Siroes in 626

has been suggested that the position of *komès* was relatively newly-established, probably during the time of Theophilos, and reflected a major military-administrative reform.³³⁴

On this argument, the figure of 200 given by the Arab geographers for the size of a *bandon* under its *komès* has been interpreted as signifying a reform under Theophilos, in which the position of *komès* was introduced. While it is admitted that the *bandon* had existed prior to this time as a tactical unit on the field of battle, it is claimed that it had had no geographical-administrative significance. The army had thus been organised into *drouggoi* or *chiliarchiai*, *hekatonarchiai*, *pentekontarchiai*, *dekarchiai* and so forth, with no *komètes*. At the same time, it is suggested that the kentarchy of 70-100 of the sixth-eighth centuries must have evolved to one of 40 men by the middle of the ninth century (the Arab geographers' figure), and back to 100 by the early tenth (*Leo's Tactica*), a somewhat unlikely (and unnecessary) account requiring a number of imperial 'reforms' of the army for which there is no evidence.³³⁵ In contrast, there is perfectly good evidence for the rank of *komès* in the thematic context long before this supposed 'reform': Theodore of Stroudios refers in a letter of the early ninth century to a deserving man who had been promoted to the position of *komès*, even though that of a *toumarchès* would not have been too good for him. The thematic context is clear.³³⁶ Similarly, in the *Vita* of Peter of Atroa (written ca. 847 and dealing with events many years earlier), a thematic *komès* from Phrygia brings his sick seven-year-old son to the saint for his help.³³⁷ There are many extant lead seals of the period ca. 650 - 930 for provincial *komètes*, although none is connected with a territorial circumscription.³³⁸

Partly, the problem lies in assuming that all references to titles must be taken as official designations. Thus when in the *Vita Philareti*,³³⁹ we read of *chiliarchiai*,

(*Chron. Pasch.*, 731.5). It is apparent that *drouggos* had already achieved a semi-official status as the term for a group of *banda* by this time; while *turma*, which had until at least the fifth century meant officially a cavalry troop of some 30 or so soldiers (cf. G. WILSTETTER, *The Roman Imperial Army*, London 1969, 146ff.), had evolved and been applied to much larger mounted divisions.

334. See TRIADGOULD, *State Finances*, 79-81; 'The Army', 90-91. This is connected by Treadgold also with the incorporation into the imperial armies of the rebel Khurramites in the 830s — some 30,000 men in total. In fact, as has recently been demonstrated, the figures are wildly inflated and rest upon a series of transformations in transmission. The original number of soldiers was probably only some 2,000. See J.-Cl. CHIYNI, 'Théophobe et les Perses', in *Byzantine Asia Minor, 6th-12th centuries*, N. Oikonomides ed., Athens 1999, 39-50.

335. TRIADGOULD, *State Finances*, 73.

336. THEOD. STRUD., *Ep.* 160 (*Theodori Studitae Epistulae*, ed. G. Fatouros, CPHB 31/1-2, Berlin-New York 1992).

337. *La vie merveilleuse de S. Pierre d'Atroa*, ed. V. Laurent, Subsidia Hagiographica 29, Brussels 1956, (BHG 2364), 20.5-6.

338. See, for example, ZACOS, VIGILRY 666, 3021, 3026, 3107, 1453A, 1533, 1678A, 1679, 1802, 1845, 2004, 2094, 2181, 2234, 2289A, 2419, 2468, 2469, 2480, 2480A, 2483; K. KONSTANTOPOULOS, *Βυζαντινά Μολυβδοβούλαια τοῦ ἐν Ἀθηναῖς Φίλαρκοῦ Νομιοχωροῦ Λιονετοῦ*, Athens 1917, nos. 197, 199; and I. KOLESIDA-MAKRI, *Βυζαντινά Μολυβδοβούλαια*, Athens 1996, nos. 68, 69 (8th c.). The majority of these bear no rank and some display markedly provincial characteristics. Those with higher ranks — *apo eparchón* or *stratélates*, for example, such as ZACOS, VIGILRY 916, 1679, 2094 — are probably not simple *komètes* of *banda*, but more important officials such as the *komètes* of Abydos, in charge of important customs establishments, and have not been included in this list.

339. V. PHILARETI, 125f. (ed. M.-H. FOURMY, M. LEROUX, 'La vie de S. Philarete', *Byz* 9, 1934, 85-170 [BHG 1511z]).

hekatonarchiai, and *pentekontarchiai*, we must beware of both literary/rhetorical usage, as well as the fact that a rigid and fixed titulature clearly did not prevail. Similarly, when in the *Vita Stephani iunioris* the emperor Constantine V is reported to have promoted a soldier to the rank of *kentourion*, we can reasonably interpret this as a (deliberately) archaic usage on the part of the hagiographet, rather than conclude that an ancient Roman rank and title had been re-introduced as part of some hypothetical 'reform'. One version of the *Vita* of Theodore of Stoudios, written after 868, and therefore well after the supposed introduction of *banda* and *komêtes*, and the consequent abolition of ranks such as chiliarach etc., refers to this hierarchy of ranks in drawing a parallel between military and monastic organisation: chiliarachs, hekarontarchs and dekatchs are listed.³⁴⁰

But the Arab accounts do not inform us about some important developments within this structure which had clearly been apparent since at least the time of Basil I. It is quite clear that, in respect of the development of thematic provinces, as we have seen, they are accurate only up to the middle of the ninth century at the latest. Whether their description even for this period is entirely accurate or not is uncertain; but it is apparent that the description Leo VI gives, which has been supposed to be a true reflection of the tactical structures of the army ca. 902, is both out-of-date in certain respects and certainly over-schematised. In respect of the position and role of the *drouggarios*, for example, it does not reflect the changes which appear to have been taking place in the 880s and after. That it is accurate for the eighth and much of the ninth century is borne out by the slender evidence offered by seals or inscriptions recording the presence or activities of *drouggarioi* of particular *themata* or places.³⁴¹ But it is very clear from evidence from the time of Basil I and after that the clear distinction between the *drouggos* and its constituent sub-element the *bandon* was beginning to disappear.

340. *Vita. Theodori abbatis monasterii Studii a Michaeli monacho conscripta*, in: A. M. Nova Patrum Bibliotheca, Rome 1852-1854, vi, 2, 291-363 (BHG 1754), see 313; for the date, C. VAN DI VORST, *An. Boll* 32, 1913, 29.

341. Interestingly, while there are no seals of *chiliarchai* for the period during which they supposedly existed, there exist many for *drouggarioi*, (i) without any localisation, (ii) as well as of a particular *thema* or a specific place or region. For seals of the group (i), see, e.g., N. OIKONOMIDES, 'Seals published 1986-1991/2' (in *Studies in Byzantine Sigillography* 3, N. Oikonomides ed., Washington D.C. 1993), 190 (no. 1151: 7th c. seal of Baanes, *drouggarios*); ZACOS, VIGLIERY 808 (7th c. seal of Gabriel, *drouggarios*); 1551 (7th c. seal of Mauritanos, *drouggarios*); 1610 (700-750, seal of Stephanos, *drouggarios*) (and cf. SCHÜMBURGER, *Sig.*, 337 [7th/8th c. seals of Stephanos, *drouggarios* and of Gregorios, *drouggarios*])); 1918A, 2011, 2106 (8th c. seals of George, John and Leo, all *drouggarios*); 2165 (750-850, seal of Marthias, imperial *mandatōr/kandidatos* [?] and *drouggarios*); 2184, 2238, 2530 (8th-9th c. seals of Michael, Niketas and Theophylaktos Dabales, all *drouggarios*); V. LAURENT, *Documents de sigillographie La collection C. Orghidan*. Bibliothèque Byzantine. Documents I. Paris 1952, no. 290 (8th c. seal of Fulampios, *drouggarios*); 291 (8th c. seal of N., *drouggarios*); see also J.-CL. CHYNNI, *Collection Seyrig*, 208; KOISIDA-MAKRI, *Bučavtivs Μολυβδούνιλλας*. Athens 1996, no. 73; and for an inscription dated 898, see also CIG IV, xl, no. 8690 (Gregory, *stratōr kai drouggarios*). Many otherwise unspecific seals of *drouggarioi* include a relatively high rank (*tapo eparchón, hypatos*, etc.), suggesting that these were perhaps naval commanders rather than simple corps commanders, and I have not included these here. Seals of ordinary *drouggarioi* for group (ii) include: OIKONOMIDES, *op. cit.* 195 (no. 503, 800-825 seal of Konstantinos, imperial *kandidatos* and *drouggarios* of S[teleukeia]?); NISBET, OIKONOMIDES, *DOSeals* 1, 39.4 (9th c. seal of Leo, imperial *spatharios* and *drouggarios* of Christópolis), 48.1/ZACOS, VIGLIERY 2587 (9th c. seal of Theophylaktos, *drouggarios* of Chalkis); ZACOS, VIGLIERY 2553 (9th c. seal of Thomas, *drouggarios* of Athens [?]); K. KONSTANTOPOLIS, *Bučavtivs Μολυβδούνιλλας τοῦ ἐν Ἀθηναις Τρικοποίον Νομοπατικοῦ Μουσείου*.

On the occasion of the cutting of the hair of the young Leo VI during Basil's reign officers of the *themata* of Kappadokia and the Anatolikon were present. These included the two *stratégoi*, the (two) *merarchai* (senior turmarchs) and the other *toumarchai* of the themes in question, and all the other thematic officers including the *drouggarokomètes*. The history of this title suggests that from at least this time the two ranks of *drouggarios* and *komètes* were increasingly closely associated together and eventually assimilated. The *Kletorologion* of Philotheos of 899 lists *drouggarioi* and *komètes* together, and significantly, describes them as '*drouggarioi tōn bandōn, komètes omoiōs*'.³⁴² The appearance of *drouggarioi* of *banda* suggests that the relatively senior grade of *drouggarios* was beginning to lose its status and its original relevance; by the time of the Cretan expedition of 911, the relationship between *drouggarioi* and *komètes* was already very variable: the 42 *drouggarioi* and 42 *komètes* of the 5,000 Mardaites who sailed with the expedition were paid a campaign salary of 12 and 6 *nomismata* each respectively, suggesting that there existed in this case a clear distinction in rank and status.³⁴³ On the other hand, so many *drouggarioi* — assuming the *drouggarioi* all held a command of some sort — suggests very small *drouggoi*, of only 100-120 men; given the fact that the same number of *komètes* were also present, it is possible that the *drouggarioi* were actually the commanders of *banda*, with the *komètes* as their second-in-command. Alternatively, of course, we could assume that half or more of the *drouggarioi* accompanied the expedition on a detached basis, leaving their own commands behind. But this would then involve assuming an enormous number of Mardaites based in the western provinces concerned, which may appear unlikely.

In fact, the assimilation of *drouggarioi* with *komètes* does seem to have been part of an evolving process, as the texts discussed so far might suggest. Just as importantly, it would seem that this process evolved at different rates in different areas: thus the Armenians of Sebasteia had 960 soldiers, 5 *toumarchai*, 10 *drouggarioi* and 8 *komètes* in the 911 expedition, paid respectively at rates of 12, 6, 5 and 4 *nomismata* as their campaign advance. Again, the proximity in the hierarchy of the *drouggarioi* and the *komètes* is evident; again, the numbers suggest the relatively small units commanded by these officers — perhaps organised in *banda* of some 50 or so men, grouped into larger divisions of some 150-200 under the five *toumarchai*. Alternatively, and more probably, we might assume that some of the troops from Sebasteia did not accompany the expedition, remaining in their own theme, but that many of the officers did, in this way being able to conjecture a larger thematic army of several thousand — although that this would number as many as 4,000, as in the similar figures for frontier *themata*.

Athens 1917, no. 192 (8th-9th c. seal of [Stylianos?], *drouggarios* of the Opsikion); F. CUMONT, 'Les inscriptions chrétiennes de l'Asie Mineure', *Mélanges d'Archéologie et d'Histoire* 15, 1895, 46, no. 429 (9th c. [?] dedication for John, *stratòr* and *drouggarios*, at Koloneia, Armenia I) and cf. *ibid.*, p. 44, no. 394 (dedication of a church by N., *stratòr* and *drouggarios* = CIG 8690). Cf. ZACOS, VIGILRY 3129 (750-800, seal of Kosmas, *drouggarios* and *ek prosopou*).

342. *Klet. Phil.*, 157.9-11; 109.23-24.

343. *De cer.*, 654.2-3; 655.5-8; 656.10-12. Since they do not fit his preconception of the relative numbers that had to be in a *drouggoi* and a *bandon*, TRENDLE, 'The Army', 119-120, decides to ignore the whole text and assume that it must be a mistake by 'Constantine [VII] or someone else'. As we will see, changes in the military command hierarchy provide a perfectly adequate explanation within the confines of the original text.

in the Arab geographers, or the figure offered in Leo's *Tactica* for the 'ideal' frontier theme cavalry army, is questionable, in view of al-Yāqubi's testimony that a region such as Charsianon provided only 500 cavalrymen.³⁴⁴

The figures for the Thrakesion contribution to the expedition of 949 may throw some light on this question. 64 *drouggarokomètes* from the Thrakesion region, along with other more senior officers, and supported by ordinary soldiers to the number of 150, went on the expedition.³⁴⁵ In view of the fact that there were 600 troops described as the Armenians who guarded the coast, and that there existed an officer — one of the four *toumarchai* of the *thema* — referred to as the *toumarchès tès paraliou*, the turmarch of the coast, it is probable that his *tourma* consisted of these 600 Armenians.³⁴⁶ It would be a reasonable supposition, in consequence, that the 800 men who paid 8 *nomismata* each not to serve on the expedition similarly constituted a *tourma* of the Thrakesion theme. The total number of cavalry soldiers from the theme might thus be in the order of 2,400-3,000 (there were apparently 4 *toumarchai*),³⁴⁷ and the *drouggarokomètes* would each be in command of *banda* of some 50 or so men. Of course, this says nothing about the theoretical potential of the region, nor of the number of persons subject to a *strateia* listed in the military registers. But that the *toumai* might often have numbered 1,000 soldiers or fewer is perhaps suggested by two passages in the *Chronographia* of Theophanes: in his account of the events of the years 717-718, the future emperor Leo is made to inform the Arab commanders that 1,000 soldiers and their *toumarchès* have entered Amorion to defend it against attack; while he records that in 792/3, 1,000 soldiers of the Armeniacon *thema* were punished for rebellion, along with their *toumarchès*, who was executed.³⁴⁸ This structure is borne out by a short passage included towards the end of the treatise on imperial military expeditions, originally compiled by Leo Katakylas in the early tenth century, revised at the order of Constantine VII in the 950s, and based on the practice of the period from Basil I up to the middle of the tenth century. Here, the hierarchy of command is specified for the *themata* as running from the *stratègoi* to their *toumarchai*

³⁴⁴ *De cer.*, 656.13-16. That the 4,000 soldiers in the *Tactica* are regarded as cavalry, not mixed infantry and cavalry, is both explicitly stated (*Tact.*, xviii, 149) as well as clear from the description of their battlefield formation: *Tact.*, xviii, 143-148.

³⁴⁵ *De cer.*, 661 - 664.2; the *drouggarokomètes*: 663.6-8.

³⁴⁶ *De cer.*, 663.4; 11-13.

³⁴⁷ The *meriarchès* or *merarchès* of the theme, who was also present with his staff, probably commanded the *tourma* in which the thematic headquarters was established (cf. a seal of a *toumarchès* of Knossos, for example: SCHÜMBURG, *Sig.*, 201; and OIKONOMIDES, *Listes*, 108 n. 65; or a 9th c. seal of a *meriarchès* of Hellas: NISBETT, OIKONOMIDES, *DOSab II*, 8.31). As the second-in-command of the *stratègos*, he was based at the theme headquarters with the latter. See HALDON, *Three Treatises*, 249-250 for further discussion.

³⁴⁸ Given the considerable variability in tactical unit size which the sources suggest, this seems more reasonable than assuming an army of 10,000 or so with *toumai* of several thousand, simply following the figures in the Arab geographer (e.g. TRIADOGOLD, 'The Army', 126-127). The latter also has to gloss over the fact that the position of *drouggarios* was evolving, and assumes that *drouggarokomètes* was simply a collective noun. While this is certainly the case, it is also the fact, as the evidence of the *Klitorologion* of Philotheos shows, that *drouggarioi* could, and did indeed, command *banda*; the two ranks were barely distinct, as the salary rates have shown, and as the reference at *De cer.*, 663.6-7 makes clear. For Theophanes' references: THEOPH., 389; 469.

and from the latter to their *drouggarokomètes*, 'so that each ... *bandon*' has the appropriate equipment. For the *tagmata* a similar hierarchy is prescribed, running in the case of the *Scholai* from the *domestikos* to the *topotérêtès*, and thence to the *komètes*.³⁴⁹

Finally, the somewhat anomalous structure of the theme of Charpezikion, a small district established shortly before 949, behind the frontier, to the south of Tephriké and west of the region of Mesopotamia.³⁵⁰ The text is explicit that the *stratègos* with the 'whole of his *thema*' went on the expedition, and this included 25 senior officers (the *stratègos* himself, the *komès tés kortès*, the *domestikos* of the theme, and 22 senior *tourmarchai*), 47 lesser *tourmarchai*, 205 *drouggarioi*, and 428 soldiers, a total of 705 men. No *komètes* are mentioned, which may lend further support to the idea that *drouggarioi* and *komètes* were effectively equivalent by this time.³⁵¹ It is quite clear that this structure represents a very different hierarchy from that of the other *themata*, and may well reflect the social composition of the forces in question, very probably Armenian, a society in which petty nobles and their followers and dependents dominated military activities.³⁵² As already noted, similar considerations apply to the somewhat older *thema* of Sebasteia (see the preceding section, on pay). To extrapolate from these figures an exact thematic hierarchy of command is impossible; what is certain is that it functioned very differently from that of the traditional and older-

349. *Three Treatises*, [C] 653-664.

350. See OIKONOMIDES, *Liste*, 359; ID., 'Organisation', 287ff.; E. HILL, M. RISSET, *TIB II*, Vienna 1981, 86 (with older literature).

351. TRIADOID, 'The Army', 129, argues that 'the whole of the theme' is not to be taken literally, and refers only to that element which went on the expedition. I find it difficult to decide one way or the other in the uncertain context we are given, although there is no reason arbitrarily to disbelieve the text in this way. He also suggests, *ibid.*, 128, that this theme, together with those of Melitene, Arsamosata, Choranon and Derzene, were formed from among the 10,000 warriors whom Ibn Hawqal reports as having fled to the empire in 935 or 936. Although this is indeed a possibility (according to Ibn Hawqal, the source of the only detailed report on these events, the emperor gave them lands from which they could be supported and treated them very favourably: see VASILIEV, *Byzance et les Arabes* ii, 2, 410-421), there is no evidence to support this claim. To the contrary, whereas Charpezikion lay behind the frontier regions, to the north of the district of Abara which was itself a *tourma* of Sebasteia, and became under Romanus I a *klesourarchia* (*De adm. imp.* §50, 167-168; OIKONOMIDES, 'Organisation', 291), the Banu Habib were clearly established along the frontier, since it was from here that they were able to expand towards Hisn Mansur and Hisn Ziyad (see VASILIEV, *loc. cit.*).

352. Cf. *De adm. imp.* §50.133-166 and comm., 190ff.; OIKONOMIDES, 'Organisation', 295-296, with further literature and sources, for the importance of the Armenian aristocracy in seizing and garrisoning these frontier districts from the time of Leo VI on; and on the internal organisation of this theme, *ibid.*, 297-299. The relatively low pay of the Charpezikion troops (soldiers received 2 *mn* each, while the *tourmarchai* and *drouggarioi* received respectively 5, 4 or 3 *mn* each) is not to be explained by the fact that they were infantry, *pace* OIKONOMIDES, *ibid.*, 299, since they are grouped with the *kaballarika*. On the contrary, the ordinary soldiers received rates not much lower than those of other units which participated (the Slavs of the Peloponnese and the Mardates received 3 *mn* each for the soldiers, for example), and the rate can more simply be explained in terms again of the somewhat different social status of the 'officers' in relation to the 'men', in which personal and kinship loyalties and the retinue system played a key role. See the remarks of A. KAZHDAN, 'The Armenians in the Byzantine Ruling Class predominantly in the ninth through twelfth centuries', in *Medieval Armenian Culture*, T.J. Samuelian, M.E. Stone eds., Chico, Ca. 1983, 440-452; and the still useful J. LAURENT, *L'Arménie entre Byzance et l'Islam depuis la conquête arabe jusqu'en 886*, Paris 1919.

established military forces.³⁵³ It is also clear that for some divisions *komètes* had entirely disappeared — replaced, it would appear, by lesser *toumarchai* and *drouggarioi*.

These developments, which become especially apparent by the middle of the tenth century, but which were clearly part of a longer-term evolution of Byzantine tactical administrative structures reaching back into the middle of the ninth century, should warn us of the danger of assuming any entirely regular or paradigmatic thematic tactical structure, with an even distribution of numbers across the various levels of unit. It also reinforces the suggestion made above, that any computation of the total numbers based on such assumptions, or based upon overall figures in the Arab geographers, are more likely to represent generalised notions of the potential strength of the imperial forces than actually-available forces. We may reasonably conclude that the *notional* strength of the various divisions and sub-divisions of a *thema* must have varied very considerably from the number of serving soldiers they could in reality field; and, as already noted, the field tactical organisation will have varied according to the campaign context: an administrative *tourma* may not always have been such on the battlefield. This seems possibly to be borne out by the fact that many seals of *toumarchai* of the *themata* bear no regional or other specification, showing that *toumarchai* could simply be 'of such-and-such a *thema*', rather than of a fixed district.³⁵⁴

In addition, the numbers in each of the various divisions — from *tourma* down to *dekarchia* — must have varied in accordance with the overall numbers of soldiers in the *thema* as a whole, and with local tactical requirements.³⁵⁵ None of this means that writings such as the *Tactica* of Leo VI, for example, did not represent the reality of some

353. Thus Treadgold's reconstitution of the theme's tactical command is pure hypothesis, based on the unsupported assumption that the full thematic force consisted of 2,400 cavalry troops ('The Army', 130).

354. There are numerous seals of *toumarchai*, some with a geographical or divisional attribution, some with no other referent at all. For the latter, see, for example: ZACOS, VIGILRY 1055, 1411, 1509, 1513, 1783, 1784, 1789, 2163, 2204, 2269, 2326, 2465, 2549, 2555a & b, 2661, 2980, 3089; PASCINKO, 'Katalog Molybdoboullov', nos. 378, 422; V. LURINI, *Les sceaux byzantins du médaillier Vaticain*, Medagliere della Biblioteca Vaticana I, Città del Vaticano 1962, 150, 151; CHYRNI, 'Collection Seyrig', 222, 223; and for an inscription, see CIG IV, xl, no. 8917 (and cf. G. DI JERIANION, in *Mélanges d'Archéologie Anatolienne*, Beirut 1928, 278-82, no. 54); these are all *toumarchai*, mostly of the rank of *spatharios* or imperial *spatharios*, some of *kandidatos* or occasionally *strator*, some unspecified, and with a few higher-ranking officers. 19 date to the 8th and/or 9th century, the rest to the seventh century. For the former group, associated with a specific region or place, the following are typical: ZACOS, VIGILRY 410 (Dazimon), 1722 (Adramytton), 1762A (Dazimon), 1905 (Klaudioupolis), 2558 (Thessaloniki), 2576 (Nikopolis), 3146 (Thessaloniki); NESBITT, OIKONOMIDES, DOSeals I, 74.1 (Bize); 79.1 (ZACOS, VIGILRY 2643) (Soxopolis); NESBITT, OIKONOMIDES, DOSeals II, 7.1 (Spartari); 61.1 (Mezon/Caria); these are all seals of *toumarchai* of varying ranks — the commonest is imperial *spatharios* — dating to the eighth and ninth centuries. A considerable number of seals for the same period also bears the name of a *thema* or thematic district, without any more precise location: ZACOS, VIGILRY 2662 (Anatolikon), 2272, 2664 (Sicily); 2059 (Crete); 1876a & b (Hellas); 1934, 2663 (Boukellarion); 2550 (Opsikion); 1710, 2523 (Kibyrrhaiotai); 2147 (Makedonia); 2198 (Pamphylia); 2576 (Nikopolis); 2623 (Thrace); 2644, 2644A, 3140 (Thrakesion); NESBITT, OIKONOMIDES, DOSeals I, 5.36 (Sicily); 71.39 (Thrace); DOSeals II, 22.42 (Peloponnese); LURINI, 'Bulletin de sigillographie byzantine', *Byz.* 5, 1930, 639 (Boukellarion). Note also ZACOS, VIGILRY 3148a & b, 800-850, seal of Nasir, imperial *spatharios* and *toumarchos* of the Phoideratoi.

355. Just as in the late sixth century, for example, the *dekarchia* in cavalry units could vary (officially) from seven to ten men, and in reality probably more than this: see MAURICII, *Strategikon*, ii, 6.2 (trans. Dennis, 28).

themes of the empire. Judging from the evidence of the two documents dealing with the expeditions of 911 and 949, a variety of tactical structures existed in different regions, the differences between them depending as much upon local geography and demographic factors as upon the mode of recruitment and payment, the reasons for their recruitment, and the social and cultural background of the soldiers. Equally, it is quite apparent that Leo's *Tactica* presents only a partial and generalised picture of military administrative structures: the evolution in the position of *drouggarios*, for example, is entirely passed over, which must introduce an element of doubt, if not into the veracity of what Leo says, then about its completeness or its applicability as a uniform, empire-wide description.

This need imply neither organisational chaos nor lack of planning. It does suggest that modern notions of administrative efficiency and systemic consistency can be applied only at great risk to a proper understanding of the evidence. Most importantly, the developments detailed above provide a context for the changes in tactical command structures which took place from the 950s, a point noted in passing already. For as has recently been pointed out, commands and tactical structures which at first represented temporary arrangements for field campaigning, involving the brigading together of a number of smaller units from the traditional thematic establishment, rapidly became permanent, and began to replace the original structures. In particular, the reduced size of the traditional thematic *banda*, *drouggoi* and *tourmai*, and the wide variability in numbers which these terms came to signify by the later ninth century and certainly by the 940s and 950s — clearly suggested by the evidence we have reviewed so far — gave rise to the infantry *taxiarchia*, nominally 1,000 strong, and the cavalry *taxis* of 300 and the *parataxis* of 500 men, under appropriately-titled officers.³⁵⁶ One stage in this process is described by the *Syllogē taktikōn* of the middle of the tenth century, which remarks on the size of the larger 'imperial' cavalry units in the provinces.³⁵⁷ The confusion and contradictions which the modern historian finds in the sources discussed so far, and in particular the very variable size of the units, coupled with the double significance of their names as both tactical and geographical-administrative units, were clearly also problematic for the Byzantines themselves. The evolution of a new, purely military-tactical terminology, divorced from the thematic administrative arrangements, represented one way by which these difficulties were resolved.

A final point worth making is the fact that from the middle of the ninth and especially during the tenth century, the state increasingly relied upon mercenary forces recruited from within as well as from outside the empire, supported by the revenues obtained through the fiscalisation of the *strateia*. Since there is rarely any way of knowing how much was raised in this way, nor of how many troops, and of what type, were recruited, efforts to compute total numbers, or indeed regional and thematic strengths, can produce little more than wild guesswork or crude generalisations of little real value.

³⁵⁶ See KIHN, *Byzantinische Armee*, 260–262, for detailed discussion.

³⁵⁷ *Syll. Tact.* 35, 4–5.

vi) *The tagmata*

Equally contentious are the numbers to be attributed to the imperial *tagmata*. One view, founded in a misunderstanding of the figures in Qudama, possibly derived in turn from al-Djarmi (although there is some doubt on this), and from the assumption that a *bandon* was always of 200 men, asserts that each of the four imperial *tagmata* — the *Scholai*, *Exkoubitoi*, *Vigla* and *Hikanatoi* — numbered 4,000 men, making a total of 16,000 tagmatic soldiers.³⁵⁸ Unfortunately, there is nothing to support this hypothesis, and some good reasons to reject it in favour of much smaller numbers.

The number of separate *banda* within the *tagma* of the *Scholai* is difficult to ascertain. According to the treatise *De re militari*, dateable to the 970s, there were nominally thirty, each commanded by a *komēs*.³⁵⁹ On analogy with the *Praecepta Militaria* and the somewhat earlier *Sylloge Tacticorum*, there were 50 men in a cavalry *bandon* (as noted already); the *Scholai* would thus have numbered some 1500.³⁶⁰ This receives indirect confirmation from the treatise on campaign organisation, which assumes a field army of 25,000 men as a maximum, including all the imperial *tagmata* and several thematic contingents (16,000 infantry, 8,000 cavalry). Since it is reasonable to assume at least 4,000 thematic cavalry in such a force, the combined *tagmata* can hardly have numbered more than 4,000 or so.³⁶¹

Once again, the information of the Arab geographers has been invoked to help clarify the issue. As we have seen, this information derives from a ninth-century context and does not seem to have been substantially revised by later excerptors. Thus Qudama gives each of the cavalry units based at Constantinople four thousand men (the *Scholai*, *Exkoubitoi*, *Arithmos* or *Vigla* and the Federates³⁶²) and each of the two infantry regiments the same, making a total of twenty-four thousand men at Constantinople. Ibn Khurradadhbih gives a rather different account: he notes that the garrison consists of 4,000 cavalry and 4,000 infantry; he also notes that the garrison of the palace consists of 4,000 infantry.³⁶³ I have argued elsewhere that the two writers each provide valuable information; but that whereas Qudama gives the names of the units in question, his information derives in part from material older than al-Djarmi, and reflects the situation in the period ca. 786-809. In contrast, Ibn Khurradadhbih, who was closer to his source in time, supplies more plausible numbers, even though he provides no details of the names of the units.³⁶⁴ It seems in fact that Qudama, or his source, has

358. See R. GUILAND, *Recherches sur les institutions byzantines*, Byzantinische Berliner Arbeiten 35, Berlin-Amsterdam 1967, I, 432; TRIAUDGOLD, 'Notes', 274-7; *State Finances*, 17f., 24ff.

359. *De re militari*, i, ed. Dennis 134ff.

360. This was Bury's conclusion: BURY, *Administrative System* 53-4.

361. *Ibid.*, ii viii.

362. QUADAMA, 196-197. The appearance of the federates, a *tourma* of the Anatolkon region and originally an element of the praesental army in the late sixth and first half of the seventh century, is illustrative of the varied source material QUDAMA'S sources employed. See J.F. HALDON, 'Kudama Ibn Dja'far and the Garrison of Constantinople', *Byz.* 48, 1978, 78-90, see 83-84.

363. Ibn KHURRADADHBHIH, 81; 76.

364. See HALDON, 'Kudāma' (cit. n. 361), 78-90. Ibn Khurradadhbih's account is not entirely clear, however, he refers to the field army of the emperor as consisting of four *banda* or divisions of 12,000 soldiers

misunderstood his information; or that in trying to reconcile two apparently conflicting sources, he has overestimated the numbers. That there were six units in the City at the time his first source was compiled is probable, given the six names he is able to record. But in reading Ibn Khurradadhbih — or the latter's source — he attempted to reconcile two groups of four thousand with his original six groups, and ended by giving each of his six regiments four thousand men.

The Arab material, in consequence, cannot be used to confirm a precise figure for the Constantinopolitan *tagmata*, although it can certainly be interpreted to support the idea of a total cavalry garrison of 4,000. What other evidence is available?

First of all there is the origin of the third *tagma*, known as the *Vigla*, the Watch or, in many texts, the *Arithmos*, 'the regiment'. Significantly, this unit was also frequently referred to in the later eighth and ninth centuries in the plural, the *Arithmoi*. It was commanded by a *drouggarios*, in contrast to the other *tagmata*, which were headed by *domestikoi*. And it appears to have been a provincial cavalry unit brought into Constantinople by Eirene to support her rule at the time of the council of 787 (when she also purged large numbers of the existing tagmatic forces for their opposition to her religious policy).³⁶⁵ The unit at first had a slightly different internal structure from the two *tagmata* of the *Scholai* and *Exkoubitoi* (which retained their sixth-century form, although the duties and functions of the officers were changed)³⁶⁶, for as a provincial unit it would have been organised along the same lines as other provincial units. Its commander, a *drouggarios*, was the head of a group of *banda* or *arithmoi* brigaded together, nominally as many as 1,000 men. A seal of the chartularies of the *arithmos* proves that initially there were at least two *banda/arithmoi* in the unit, as the plural version of the title indeed suggests, each with its own administrative staff, although later material makes reference to only one *chartoularios*. Similarly, the presence of several *komētes* points in the same direction. The size of the *arithmoi* or *banda* which made up the unit as a whole — originally a *drouggos* from one of the provincial armies — is unknown. On the other hand, the total numbers of the unit cannot have been much greater than the 1,000 or so normally associated with a *drouggos*, and may have been less.³⁶⁷ One of the four *tagmata* thus seems to have had an establishment of about 1,000 men in its early days.

In the late eighth century, there were at least eighteen *banda* of excubitors, and at least eight *scholai*, each with its *komēs*.³⁶⁸ Whether or not there were only a small number of *scholai* and a large number of *banda* of excubitors, each group having

(6,000 cavalry and 6,000 servants), under four *patrikios*. This may be a confused reference to the four *tagmata*; it may equally refer to the commands of four thematic *stratēgor*: see *ibid.*, 81-82.

365. For a detailed analysis of these developments, see HALDON, *Byzantine Praetorians*, 236-241; and 293-295 for the internal structure of the *Vigla*.

366. See HALDON, *Byzantine Praetorians*, 228-235, 282-293.

367. The internal structure of the *Arithmos/Vigla* differs only very slightly from that described for regular cavalry units of the field armies in the late sixth century as described in, for example, the *Strategikon* of Maurice. See HALDON, *Byzantine Praetorians*, 240-241 with sources.

368. *Vita Ioannicii* (AASS Nov. u/1, 332-383 [BHG 935]), 334; V. LAURENT, *La collection C. Orbidan*, 28, no.28, who refers to a seal of a *kandidatos* of the eighth *scholē* in the Shaw collection; and see ZACOS, VIGIERI 3173, a seal of Sergios, *komēs* of the eighth *scholē*, dated to the later eighth century.

different-sized units, is not known; but given the fact that the *scholai* and excubitors were both reorganised by Constantine V, and at the same time; that they were placed under a similarly 'rationalised' but originally much older organisation; and that their number was increased beyond what it had originally been (in terms of units per *tagma*) — there had been seven *scholai* before the reforms, but only three hundred excubitors — the size of the individual *scholai* probably equalled that of the excubitor *banda*; and fifty is a reasonable figure for each *bandon* or *schole*.³⁶⁹ This would give some nine hundred men for the excubitors and at least four hundred for the *scholai* at the end of the eighth century. Possibly as early as this there were thirty *banda* of *scholarioi*, which would give the fifteen hundred suggested by Bury.

That the four imperial *tagmata* were not each 4,000 strong, but probably very much smaller than this, seems to be supported by the information in the document relating to the expedition of 949. Here, as we have seen, the *domestikos* of the *Hikanatoi* with his whole *tagma*, numbering 456 men, together with the *domestikos* of the *Exkoubitoi*, with his whole *tagma*, numbering 700, participated. In addition, soldiers from all of the four *tagmata* in Thrace were also present, numbering in total 493 (139 officers, 354 men) and from Macedonia, numbering 376 altogether (83 officers and 293 men). Each group was under a *topotérêtēs* (although of which *tagma* is unclear). There is no contradiction here: the two *tagmata* of the *Hikanatoi* and *Exkoubitoi* listed are explicitly described as the peratic units; like the *Scholai* and *Vigla*, they had contingents based in Thrace and Macedonia as well as in Asia Minor; the *topotérêtēs* of the unit commanded one section, the *domestikos* the other; and in the case of the *Scholai*, we know from later evidence that the *chartoularios* might take command also.³⁷⁰ Assuming that the combined Thracian and Macedonian contingents of these two units were the same size as their peratic counterparts (and they may well have been very much smaller), we might thus suggest that the total for the *Hikanatoi* was some 900-1000 men;³⁷¹ and for the *Exkoubitoi* about 1400-1500; a figure which would fit in with Bury's proposal, based on the 50-man *bandon*, that the *Scholai* totalled 1500 also. The *Arithmos*, as we have already seen, may have numbered 1,000 or so, although a higher figure is entirely possible. In this connection, it is worth bearing in mind that it was thought sufficient to replace the *Arithmos* in its duties of guarding the imperial palace, when it was on campaign with the field army under the *domestikos* of the *Scholai*,

369. As we have seen, the number in a *bandon* varies enormously: according to the *Strategikon* up to 400 in the sixth and early seventh century; according to Leo's *Tactica* from 200 to 400 in the early tenth century; but according to the *Sylloge Tacticorum* in the mid-tenth century *banda* of 50 had been usual before this time, as well as much larger units of 200 or more. The original *scholae* in the fifth and sixth centuries had numbered in theory 500 each, and there were usually seven such units, making a total of 3,500.

370. For the division between the European and Anatolian sections of the *tagmata*, see AHRWEILER, 'Recherches', 30; KUHN, *Byzantinische Armee*, 62 and n. 141. For the *chartoularios* in charge of 15 *banda*, see *De re militari*, 1, ed. Dennis 135-138. The *tagmata* may well have had also more than one *topotérêtēs* each: see HALDON, *Byzantine Praetorians*, 283, 291 and refs. Only from the 950s does a division of the supreme command into eastern and western sections, under their respective *domestikoi*, seem to have become permanent. See KUHN, *Byzantinische Armee*, 135ff. with literature and sources.

371. A contention supported, perhaps, by the fact that the *hikanatoi* as originally constituted appear to have been modelled on the *Arithmos*: see HALDON, *Byzantine Praetorians*, 245, 295ff.

with the crew of one of the two imperial *dromônes* commissioned by Leo VI. Assuming the maximum complement of oarsmen/soldiers of 300 or so, this is indicative of the size of the units it was thought necessary to have in Constantinople to protect the emperor and the palace, and to replace the detachments of the Watch on sentry- and patrol-duties.³⁷² In any case, we are still left with a maximum grand total for the four imperial *tagmata* of about 4,000-5,000, a number that would fit with the 8,000 or so cavalry, including the *tagmata* and the accompanying thematic cavalry, which were assumed as part of the field army discussed in the treatise on campaign organisation and referred to at the beginning of this section.³⁷³

This order of magnitude for tagmatic units is borne out by what is known of similarly-constituted units in the tenth and eleventh centuries in general. The extra units drafted for the expeditions of 911, 935 and 949 numbered from between 400-500 (the Armenians of Platanion), 608 (newly-recruited into the *tagmata*), and 1,000 (in 949, to be paid with the other *tagmata* of the East). The majority of units of foreign mercenaries recruited in the late tenth and eleventh centuries numbered from 300 to 800, with the exception of the Varangian units, for which estimates vary between 4,000 and 6,000. But this seems to have been both exceptional, and a result of the fact that the traditional guards units — numbering in effect some 4,000 — were based for the most

372. The detachments of the *Vigla/Arithmos* were based in and around the covered hippodrome when in Constantinople: see R. GUILLAND, *Recherches sur les institutions byzantines*, Berlin-Amsterdam 1967, i, 564f.; LAURENT, *Corpus II*, 465ff.; JINKINS, *De adm. imp.* comm., 198-199. Whether the palace detachment numbered 100, as the camp-patrol of the *Vigla* did on imperial expeditions (as JINKINS, *ibid.*, maintains) is uncertain, although possible: see *Three Treatises*, [C] 421-4322 and comm., 240.

373. On the basis of assuming a 200-men *bandon*, and applying the supposedly regular thematic structures of *drougoi*, *banda* and so on to the *tagmata*, TREADGOLD, 'Notes', 274-277, and *State Finances*, 17f., 24ff., has attempted to specify the exact number of officers of different grades in the *tagmata*, based on the information from the *Klêtorologion* of Philotheos. Thus there must have been 20 *komîtes*, for example, to command twenty *banda*, each of 200, thus producing a neat 4,000 men for each *tagma*. As we have seen, this regularity of structures is by no means to be assumed, neither between *themata*, and certainly not between *themata* and *tagmata*, which were not comparable. To further illustrate his argument, Treadgold takes the figure of 204 officers of each of the four *tagmata* who were invited to a series of meals in the imperial palace, in the hall of the nineteen couches, as indicating that each *tagma* therefore had precisely 204 officers, which T. then breaks down into their constituent parts according to his model. See *Klet. Phil.*, 171, 23-27 (*Scholar*); 173, 13-16 (*Exkoubitor*); 27-30 (*Arithmos*); 175, 8-11 (*Hikanator*). There is a major objection to this, and the assumptions upon which it is based, however. The first, already noted by OIKONOMIDES (*Listes*, 170 n. 157), is that the form of the text suggests not that every single one of the officers from each *tagma* was to be invited, but rather officers from all the grades of the *tagmata* concerned. The number of 204 reflects the amount of seating available, once the remaining necessary guests had also been taken into account (12 poor persons, for example). This is confirmed by the accounts of other ceremonies a few days later, for the officers of the units of the Walls and the *Noumera*, which according to Treadgold should have had the same establishment as the four imperial *tagmata*, were invited, together with a number of other palatine officials, to make up the number of 204 guests at an imperial feast, leaving room at the tables in question for the standard 12 poor persons. See 183, 9-14. In several other examples the key number of 204 clearly represents the number of persons who could be accommodated at 17 of the 19 (or 21, depending on the feast-day) tables. Cf. 179, 10-16; the total of guests invited varied from 228, 12 at each table, 19 tables in total; or 252, on occasions when extra tables were set up: see OIKONOMIDES, *Listes*, 164 n. 136. But even if we give the benefit of the doubt to this interpretation, there is no guarantee that the 204 officers in question commanded the numbers Treadgold suggests: it is equally plausible to suggest that the 204 officers in question included 30 *komîtes* (in charge of 50 men each), and a somewhat different distribution of the other ranks.

part in the provinces and could no longer be relied upon to support the emperor rapidly, which was the original function of the new unit.³⁷⁴ This does not exclude the possibility that on occasion much larger corps were recruited or enrolled by the régime at Constantinople; but it does suggest that very large units of standing contingents were not the norm, particularly if we bear in mind the political and security aspects, of which emperors must have been very conscious.³⁷⁵

The material discussed thus far makes it clear, in consequence, that the force assembled for the expedition of 911, while representing by no means the maximum of cavalry or infantry troops that the empire had at its disposal, whether in real terms — actually available manpower — or in nominal terms — registered as subject to the *strateia* — nevertheless constituted a major force, considerably larger in total manpower than the average expeditionary force, and a good deal larger than the defensive forces assembled in or behind frontier districts to repel or cut off hostile raiding parties or larger invasion forces. In contrast, the forces assembled for the campaign of 949 were much smaller, and perhaps more representative of the magnitude of a major military undertaking of the period. The anxieties in respect of costs, and earlier losses, expressed by those members of the imperial palace regarding the expedition undertaken in 961 were well-founded.³⁷⁶

9. The imperial and thematic fleets

It remains to examine the constituent elements of the imperial and thematic fleets involved in the expeditions to Crete and Italy.³⁷⁷ From a comparison of the statistics for the number and types of vessel employed in the two expeditions of 911 and 949 one development immediately becomes apparent: whereas the fleet in the first campaign consisted primarily of larger, heavier *dromones*, by the time of the 949 campaign lighter vessels with a smaller crew and lower carrying capacity predominated. In 911 the vessels involved were as follows: 60 *dromones*, each with a complement of 230 oarsmen/soldiers and 70 soldiers; 20 *pamphylooi* with 130 men and 20 with 160 men. The 70 soldiers on each of the 60 heavier vessels were made up from the *kaballarioi* of the *tagmata* and

374. See the discussion and sources in CHILYNI, 'Les effectifs', 323-324.

375. Cf. J.F. HALDON, 'Strategies of Defence, Problems of Security: the Garrisons of Constantinople in the Middle Byzantine Period', in *Constantinople and its Hinterland*, C. Mango ed., Oxford 1995, 143-155.

376. TH. CONI., 474.14 - 175.1.

377. The texts have been used by several scholars to elucidate the history of the Byzantine imperial fleet in the period in question, both in respect of organisation and numbers, as well as the technology of warships and ship-construction in general: see AHRWILER, *Mer*, esp. 408-439; EICKHOLT, *Seekrieg* 81ff., 133-151; H. ANTONIADIS-BIBOU, *Études d'histoire maritime à Byzance, à propos du Thème des Caravisiens*, Bibliothèque Générale de l'École Pratique des Hautes Études, VI^e section, Paris 1966; R.H. DOLLEY, 'The warships of the Later Roman Empire', *JRS* 38, 1948, 47-53; JUNKINS, *De adm. imp. comm.* §51 (195-197); A. TOWNLEY, *Constantine Porphyrogenitus and his World*, Oxford 1973, 323-345; see also the section in L. CASSON, *Ships and Seamanship in the Ancient World*, Princeton 1971, 148-154; CHRISTIDES, *Conquest of Crete*, 42-50; PRIOR, *Geography, Technology and War*, 25-57 (commercial ships); 57-86 (warships). See also LEWIS, *Naval Power*, 73ff., 156ff.

other mounted units (see table i, 1 [B] - [D] and compare with 10 and 11 - 16). The 20 ships with crews of 160 are probably meant, on the same basis, to include the 700 Rus' soldiers who accompanied the fleet (35 men per ship?), which may mean that, as with the tagmatic soldiers, they are effectively listed twice.³⁷⁸ Thus 100 vessels of the imperial fleet were involved, transporting some 23,800 soldiers and sailors.

In 949, in contrast, 150 units³⁷⁹ are referred to (apparently representing the total of complements in the imperial fleet), and of these, 128 units/vessels are specified. The question of whether or not, as Jenkins suggested,³⁸⁰ the imperial fleet consisted of fewer than 150 vessels (emending $\rho\nu'$ = 150 at 664.7 to $\rho\nu'$ = 108, which would be palaeographically acceptable), is to be answered in the negative. Jenkins' suggestion makes some sense in the light of the figures given at the beginning of the section (100 *ousiaka chelandia*, 6 *pamphylooi* and 2 further *pamphylooi* recently completed: 664.7-8). According to this argument, the number actually specified amounts to 118 vessels, and should be understood to include perhaps the 10 vessels of the imperial flotilla, thus making 108 plus 10.³⁸¹ It is clear, however, that at least 128 ships actually existed on the establishment: 100 are specified quite clearly as *ousiaka chelandia*, i.e. warships with a single complement; a further 8 are *pamphylooi*, and 20 *dromones* are also mentioned, each with two complements, making 128 ships, and 148 complements. Of these, the whereabouts or duties of 110 standard *ousiai* and 8 *pamphylai ousiai* are listed: 7 *pamphylooi* and 33 *ousiaka chelandia*, along with 20 *dromones* each with 2 *ousiai* (total: 80 *ousiai*) were sent to Crete; 1 *pamphylos* and 24 regular *ousiai* (with or without their

378. This is apparent from a statement to this effect in the document for 949: *De cer.*, 670.3-6, and from the reference to the tagmatic and other troops, numbering 1,453, who travelled with the warships to Italy in 934/935: *De cer.*, 660.13ff. See the discussion in MAKRYPOLIAS, 'The Navy', 166-167. Note that the crews or complements of the *pamphylooi* in 911 are unspecified, leaving open the probability that they consisted of oarsmen who, as in the case of the larger *dromones*, were also soldiers. This is stated clearly at *De cer.*, 670.4, so that any idea of a major naval reform and the introduction of 'marines' into the fleet must be abandoned (see, e.g., TRENDLE, 'The Army', 87, 111).

379. The term used is *ousia*. JENKINS, *De adm. imp.*, comm., 195-196, to §51, followed by others (see AHRWEILER, *Mcr.*, 416f.; L. CANNON, *Ships and Seamanship in the Ancient World*, Princeton 1971, 150; R.H. DODD, 'The warships of the Later Roman Empire', *JRS* 38, 1948, 48) argued (a) that the term meant complement; (b) that ships could have more than one complement; and that (c) in consequence the total of ships was less than the total of 150 'complements'. Makrypoulias has attempted to refute this ('The Navy', 154-156), arguing that the term is best understood as 'unit', i.e. vessel and crew; but that it is unspecified, referring to any size or type of vessel. But this ignores the fact that ships' crews could be detached from their vessels for particular duties, which is the only sensible way to understand the fact that one ship (*a pamphylon*) and 24 *ousiai* were left to guard Constantinople in 949 (664.12-13) — cf., for example, *De cer.*, 579.1; 5, from a ceremony of 946, in which the *ousia* of the *drouggarios* along with the *ousiai* of the *pamphylooi* take part in a ceremony in the imperial palace; or *De adm. imp.* §§51.40-41, where an *ousia* from one of the imperial *dromones* is left to guard the imperial palace during the emperor's absence. Here, the term clearly refers to the complements of the vessels in question and attached to the *drouggarios*. This is confirmed by the emended text at 664.9, as noted already above, where $\xi\xi\ \omega\tau\omega\tau\omega\ \rho\nu\sigma\iota\omega\omega$ should read $\xi\xi\ \omega\tau\omega\tau\omega\ \rho\ \omega\sigma\iota\omega\omega$, referring to the 100 *ousiaka chelandia* in the preceding line. It is also confirmed by the use of the adjective *ousiakon* to describe these *chelandia*: i.e. *chelandia* with (one) complement, in contrast to boats with 'full' complements, i.e. *pamphylooi*, or boats with double complements, i.e. *dromones* of the fighting establishment (as in 664.14-15).

380. *De adm. imp.* comm., 197.

381. See *De adm. imp.* §51.13-14 and commentary.

ships) stayed to guard Constantinople; 7 *ousiai* were based at Dyrrachium and Dalmatia, 3 had been sent to Spain, and 3 were based in Calabria (total: 38 *ousiai*), making a grand total of 118 *ousiai*.

The whereabouts or duties of 10 complements/ships of the 128 vessels that certainly also existed is thus not stated. But given the definite existence of 128 vessels and 148 *ousiai*, and the opening statement that the imperial fleet consisted of 150 *ousiai*, then by varying Jenkins' argument, that the missing complements were those of the 2 imperial *dromónia* constructed by Leo VI and based at Constantinople,³⁸² we arrive at a total of 150 *ousiai*. It might be objected that *dromónes* had double crews, so that there should thus be 152 *ousiai*! But in fact, it is clear that these imperial warships only had one crew, taken from the regular establishment.³⁸³ The figure for the whole imperial fleet of 150 *ousiai* should, therefore, stand.

The size of neither the crews of the imperial *dromónes* nor those of the various *chelandia* are specified, although figures for the thematic complements are given in the next sections — *ousiaka chelandai* carried either 108 or 110 men, *pamphylooi* carried 120, and *dromónes* 220. A total of 80 units of the imperial fleet, on 60 ships, thus sailed to Crete: 20 *dromónes*, 7 *pamphylooi* and at least 33 *ousiaka chelandia*. The 20 *dromónes* are stated to have had 2 *ousiai* each, and since the *dromónes* of the *themata* had crews of 220, this does indeed suggest that the standard *ousia* was indeed 108-110, and that these *dromónes* were crewed by two such units each. The total strength was thus some 8,870 men, assuming 220 per *dromón*, 120 per *pamphylos* and 108-110 per *ousiakon chelandion*.

The *ousiakon chelandion* does not appear in the 911 documents, but its complement of 110 was probably not a maximum.³⁸⁴ It is difficult to know exactly what type of vessel is implied by these terms: *dromón* and *chelandion* were clearly synonymous in certain contexts, but the difference between ships which were *ousiaka* and ships which were *pamphylooi* seems to have lain primarily in the size of the crews, and only secondarily in the size of the vessels themselves.³⁸⁵ On the other hand, the

382. See *De adm. imp.* comm. at 196.

383. See *De adm. imp.* §§1.40-45; 80-82, and Jenkins' commentary, 196, 198-199, 200-201.

384. For the complements, see *De cer.*, 652.10 - 653.16; 664.19 - 665.13; 670.3-6. See also LEO, *Naumachica*, §§8-12; repeated at NICEPHI., *Tact.*, 54. §§7-10 (ed. DAIN, *Naumachica*).

385. See the discussion in AHRWELLER, *Mer*, 411ff.; and LIO, *Naumachica*, §42 (NICEPHI., *Tact.*, 54. §§40, 41); the text makes it clear that a *pamphylos* was simply a *chelandion* which was filled with the best and most able soldiers and oarsmen in the fleet, and which had a larger than usual complement. According to the two texts it ought to be bigger than the average *chelandion*, but was not necessarily so. Such vessels are described as being 'made the *pamphylos*', and the verb *παρφύλω* is used of the process of filling them up. The term *ousiakon chelandion*, in contrast, must therefore be understood to represent the standard oared fighting ship with the basic crew of 108-110. Leo's *Naumachica* and the relevant chapter of the *Tactica* of Nicephorus Ouranos describe warships of the standard type, also described as a *dromón*, and with a crew of 100 oarsmen/soldiers, a *kentarchos*, a standard bearer, 2 *prótokaraboi* (steersmen), a servant or assistant to the *kentarchos*, two first oarsmen (1 to act as *siphónatōr*, one in charge of the anchor tackle) and a *prórcus* (LEO, *Naumachica*, §§8, 9 [NICEPHI., *Tact.*, 54. §§7, 8]). This makes a crew of 108, exactly as described in the *De cer*. This could then be increased to 'make into a *pamphylos*' when required; although it is also clear that some vessels were built on slightly larger lines and designated as *pamphylooi* (*De cer.*, 664.7-8). Large *dromónes* of 200 men or more should also be available: LIO.

eight *pamphylooi* of the imperial fleet mentioned in the 949 documents appear to have carried three liquid fire *siphones*, as did the *dromônes* of the fleet, so the distinction is even more blurred. That the number of men per oar played a rôle is highly unlikely, since until considerably later the standard number was one man per oar.³⁸⁶

Although the stated complements of the ships varies between 911 and 949, there is no reason to think that the types of ship referred to as *dromôn*, *pamphylos* and (*ousiakon*) *chelandion* had changed, even if the terminology is itself somewhat confusing; so that we may reasonably assume that if a *dromôn* could carry at least 300 men, and a *pamphylos* up to 160 in 911, they could do so in 949. This leaves room, theoretically, and on the basis of the complements given for *dromônes* and *pamphylooi* in 911, for a possible further 1,880 men on the *dromônes* and *pamphylooi*. If we assume that the *ousiaka chelandia* could also accommodate some 20 or 30 men extra if necessary (especially if the real difference between them and *pamphylooi* was numbers on board, rather than dimensions of the vessel) then a further 660 might be carried in these ships. The text makes it clear, as we have seen, that the tagmatic cavalry were also carried with the imperial ships, so that space for a further 2,025 soldiers from the four *tagmata* needed to be found. As we have also seen, 1,600 of these could be carried in the 20 *dromônes* (80 per ship, making a total of 300 per ship); a further 280 on the 7 *pamphylooi* (40 per ship, making a total of 160 per ship); the remaining 145 could thus be transported on the 33 *ousiaka chelandia* (about 4-5 per ship, giving a maximum of 115 per ship). More could probably have been carried if necessary.

From the evidence of these two documents, therefore, it seems that the crews of the warships of the imperial fleet numbered some 19,600 who sailed on the expedition in 911 (whether or not it went on to Crete),³⁸⁷ whereas the crews of the imperial fleet

Naumachica, loc. cit.; NICEPH., *Tact.*, loc. cit. AHRWILER, *Mer*, 415, has suggested that *pamphylos* refers in fact to a round-ship rather than a warship, employed for transporting material and livestock. But technically round-ships were by definition wind-driven, not oar-driven: see PRYOR, *Geography, Technology and War*, 27ff. In addition, since *pamphylooi* are explicitly described as a sub-type or variant of *chelandia* or *dromôn* (see AHRWILER, *ibid.*, 412f.), both in the documents at issue here (where they are clearly associated with naval and military action, not transportation; cf. the documents of 949) and in the treatises on naval warfare, their function as transport ships is excluded. For the *siphones*, see above, and 672.9-10 (emended text).

386. See the discussion in MAKRYPOLIAS, 'The Navy', 162-166, with sources and previous literature. His conclusion, deduced from *De cer.*, 672.6, that the *dromôn* had 120 oars (i.e. 60 per side), rather than 100 (i.e. 50, in two banks of 25, per side, as in the treatises referred to: see LIO, *Naumachica*, §§7, 8 [NICEPH., *Tact.*, 54.§§6,7]) is most unlikely: each ship had to carry extra oars, and indeed the treatises refer specifically to the carrying of large amounts of extra equipment to cover damage from weather or action: *Naumachica*, 1, 5 (= 6, 4). See also G. MAKRIS, *Studien zur spätbyzantinischen Schiffahrt*, Genoa 1988. Methodologically, it is anyway dubious to assume an exact parallel between the number of items carried, and the number of items in use at any given time. This is surely especially true of oars, which are particularly vulnerable, and for which no ship could possibly put to sea without replacements.

387. Makrypoulias hypothesises that the whole imperial fleet would in fact have been larger, but that those vessels not listed were otherwise engaged, laid up, or omitted from the details incorporated into this collection of material. While the last suggestion seems least likely, the probability that there were more than 100 vessels all told in the imperial fleet seems very high. See MAKRYPOLIAS, 'The Navy', 156, who suggests in addition 10 *dromônes* for the Stenon and the two imperial vessels established by Leo VI, at 230 men per ship; and a further 38 vessels of the *pamphylos* type at 130 per ship. The actual numbers probably varied somewhat from this, but the figures give some guide as to the possible numbers.

involved in the Cretan expedition in 949 appear to have numbered far fewer, a mere 8,870 (i.e. 80 complements of 108 - 110), and with a total, including crews absent on other duties, numbering some 16,200 - 16,500 (150 complements of 108 - 110). Not only do overall numbers appear to have been reduced, by just over 20%, but the proportion of the imperial fleet involved in the Cretan expedition was also reduced, by something over 50%. The imperial fleet appears thus to have come to rely upon slightly smaller complements, and possibly on a much smaller number of the larger *dromōn*-type vessels; on the other hand, according to the text for the 949 expedition, the *dromōnes* now had three liquid fire projectors and the ordinary *ousiaka chelandia* two each, thus suggesting a considerable increase in their armament.³⁸⁸ The results of the campaign, however, suggest that these could only have been used in very favourable circumstances: when the fleet was caught unawares and not combat ready, the liquid fire was not a particularly efficacious weapon.³⁸⁹

The only evidence for a change in the organisation of the fleet is the reference to the appearance of the *ousiai* of the *pamphyloī* and a *megas pamphylos* in a ceremony dated to May 1st in the year 946.³⁹⁰ That the latter is a naval officer under the *drouggarios* of the fleet at Constantinople who, together with his men, formed a special elite unit within the imperial fleet, is a possibility. But no such officer appears in any other ceremony, and in the context the term *megas pamphylos*, which is listed together with the *ousia* or unit of the *drouggarios*, might just as well refer to the complement or unit of the largest *pamphylos* in the imperial fleet. The rest of the *pamphyloī* are represented in the ceremony by the *ousiai tōn pamphylōn* a few lines further on. The *pamphyloī* probably do represent a better class of fighting crew, however (and as suggested in Leo's *Naumachica* and the *Tactica* of Nicephorus Ouranos). And it is significant that only 8 *pamphyloī* appear in the fleet in 949. This may well reflect the establishment at some point between 911 and 949 — perhaps in association with the rise to imperial power of Romanus I, formerly the *drouggarios* himself — of a small élite corps of crews and warships of the *pamphylos* type (larger and better crews than the average *ousiakon chelandion*; perhaps slightly larger, custom-built vessels, as implied by the reference to two recently-constructed vessels in the 949 material) at Constantinople, and the restriction of the term *pamphylos* — by 946 at least — to a more specialised meaning. Whatever the interpretation, it is clear that the imperial and thematic fleets appear in 949 to have relied much more heavily than hitherto on relatively light, and presumably swifter, warships. Whether this represents a deliberate shift in policy in respect of maritime strategy, or a result of financial exigencies, is impossible to say. It is entirely possible that the need to respond more rapidly to the threat posed by the increasingly dangerous Fatimid fleets in the central and eastern Mediterranean basin played an important rôle; but this is an issue which deserves greater attention than can be afforded it here.³⁹¹

388. *De cer.*, 672.3; 673.10.

389. See above, section 5.

390. See AHRWILDER, *Mer*, 416; *De cer.*, 570.11 - 582.22, at 579.2-5.

391. See esp. Eickhoff's discussion: *Seekrieg*, 296ff.

As far as the thematic fleets are concerned, we have already noted the apparent reduction in the numbers of ships and men available between the expedition of 911 and that of 949. As with the central, imperial fleet, it is difficult to say whether this was due to lack of resources, as has been suggested,³⁹² or the result of deliberate planning. The lack of transport vessels might lend some support to the former interpretation.³⁹³ The expedition of 949 was smaller than that of 911, as we have also seen, and although the decline in the availability of regular thematic troops recruited through direct obligation to the *strategia* is generally acknowledged, it is clear that the state could recruit appropriate numbers of soldiers on a mercenary and short-term basis, where necessary, using the cash or resources obtained through the commutation of the *strategia*. The case of the Charpezikion units is probably illustrative of the situation in the middle of the tenth century, as we have seen. In the first place, it is very likely that the district from which the soldiers themselves were drawn did not have the extra resources to pay for the campaign expenses of the troops, since the cash was extracted by commuting the *strategia* from a *tourma* of the Thrakesion region. In the second place, the troops from the Charpezikion were probably full-time standing detachments, and this was also a convenient way of covering the expenses of troops who were probably of better quality than the regular thematic forces (although this must remain a guess). That lack of resources was not necessarily an issue, and that the expedition of 949 was planned and executed on a smaller scale, is supported by the apparently much larger number of vessels and soldiers involved in the expedition of 961, led by Nicephorus Phocas.³⁹⁴ For although the empire had, as a result of the absorption of some territory along the eastern front, expanded somewhat since 949, the overall availability of resources cannot have changed much in the interim.

10. Some conclusions

The documents concerning the three expeditions of 911, 935 and 949 provide an immense amount of valuable information about the naval and military organisation of the empire of the period. I have argued that the documents incorporated into the Leipzig manuscript were not simply copied wholesale from a pre-existing account of the expeditions in question. On the contrary, several layers of information and copying ate

392. MAKRYPOULIAN, 'The Navy', 157-158.

393. Preventing the transport of the Thrakesion contingent: 663.13-15; 667.5-6.

394. See the detailed account in D. TSOURGARAKIS, *Byzantine Crete. From the Fifth Century to the Venetian Conquest*, Athens 1988, 58-74. In spite of the reports of over 3,000 vessels (including 1,000 *dromones*) the actual numbers were probably much less — perhaps the rather odd figure of 307 transport vessels reported in TII. CONI., 475.18-20 reflects an original actual number of either warships or transports, or both. The *Life of Athanasios of Athos* mentions 250 warships: see O. LAMPIDIOS, 'Μια παραδίηγη της βιογραφίας Αχίου 'Αθωνίου τοῦ Αθωνίτου', *Byzantina* 6, 1974, 283-319. Nicephorus appears to have employed a ruse to convince the defending Arabs that his force was much greater than was actually the case: see O. LAMPIDIOS, 'Ein unbekannter Kunstgriff des Nicephorus Phocas bei der Landung auf Chandax (Kreta) (960)', *BZ* 69, 1976, 9-12, see 11. It may well be that the Byzantine reports were influenced by this, or by Arab accounts of the attack.

represented in this material, the final version of which may even have attributed an incorrect context to the first collection of data, for a separate expedition to Crete under Leo VI may never actually have taken place. But this analysis has also shown that, while the facts and figures given in some of the material are reliable and can be confirmed from other sources, much of the information has to be treated with considerable caution, a reflection both of the fact that it was derived by an editor from a variety of different sources, and of the equally important fact that the purpose behind the collection of the different items of information was determined by the requirements of the various departments which originally collected and collated the material. This is not to say that the information incorporated into the various documents and memoranda from which chapters 44 and 45 of Bonn's edition were constructed is in any way 'incorrect' or untrustworthy. But without a better idea of the context and function of each element it is difficult to evaluate it confidently. This is why I would argue that the evidence of these documents should not be employed to impose a uniform pattern upon middle Byzantine administrative arrangements, but be treated rather with the greatest reserve: particularly clearly in the case of the numbers involved, but also in respect of the actual administrative structures through which different parts of the army in different areas of the empire actually worked.

Possibly the single most puzzling question that arises from the materials for the expeditions to Crete is: why was the expedition of 949 so much smaller than that of 911? Was it a result of lessons learnt, a cautious planning team and a deliberate strategy, and/or an overly concerned emperor? Did it reflect problems faced by the Empire in respect of manpower — not in terms of absolute availability, for it has been suggested, on the basis of all the available evidence for the period, that the east Mediterranean world was experiencing the beginnings of a period of demographic expansion at this time; but rather of the state's ability to control its demographic resource base, in the context of the expanding economic power of the dominant social elements? Or is it rather the case that only part of the documentation for this campaign has been included in this material? The form in which the information for the imperial fleet and the units which are listed is presented (particularly the repetition of the units involved and the payments made to them at 662.11ff., and 666.1ff.), as well as that for the equipment for the fleet and its spares, suggests that this was not the case, and that the material here represents the whole expeditionary force. In which case the conclusion arrived at in section 2 above, that the material for 911 actually derives from data connected with Himerios' large-scale undertaking of 910 against the Syrian coast, Cyprus and, possibly Crete, seems the more likely.

These are all extremely important questions, although they far surpass the limits of this paper. But they deserve an answer, since they are central to our understanding of the dynamic and the potential of the Byzantine state at this time. The analysis presented here has attempted to set out clearly the nature of the material and the problems of interpretation which it offers.

Abbreviations

TEXTS

- ANONYMOUS, *Poliorkétika* = 1) Ἀνωνύμου ἡτοι Ἡρωνος Βυζαντίου Πολιορκητικά, ed. C. WESCHER, *Poliocétique des Grecs. Traités théoriques-récits historiques*, Paris 1867, 197-279; 2) ed. and German trans. R. SCHNEIDER, *Griechische Poliorketiker*, II, Abh. d. königl. Gesellschaft d. Wiss. zu Göttingen, phil.-hist. Kl., neue Folge, x, Berlin 1908, no. 1.
- BGA = *Bibliotheca Geographorum Araborum*, ed. M.-J. De Goeje, Leyden 1870ff.; nunc continuata consultantibus R. Blachère [etc.], Leyden 1938ff.
- De adm. imp.* = *Constantine Porphyrogenitus. De administrando imperio*, I: Greek text ed. Gy. Moravcsik, Eng. trans. R.J.H. Jenkins. New revised edn., CFHB 1 = DOT 1, Washington D.C. 1967; II: Commentary, ed. R.J.H. Jenkins, London 1962.
- De obsidione toleranda* = *Anonymous de obsidione toleranda*, ed. H. van den Berg, Leiden 1947.
- De re militari* = *Incerti scriptoris Byzantini saec. X. Liber De Re Militari*, ed. R. Vári, Leipzig 1901; Eng. trans. and edn.: G.T. DENNIS, *Three Byzantine Military Treatises*, 241-335 [text 246-326].
- De velitatione* = G. DAGRON, H. MIHĂESCU, *Le traité sur la Guérilla (De velitatione) de l'empereur Nicéphore Phocas (963-969)*. Texte établi par Gilbert Dagron et Haralambie Mihăescu, trad. et comm. par G. Dagron, Paris 1986 (text 28-135); Eng. trans. and edn.: DENNIS, *Three Byzantine Military Treatises*, 137-239 (text 144-238).
- HERON, *Belopoeica* = Ἡρωνος Κτησίθεου Βελοποεικά, ed. C. WESCHER, *Poliocétique des Grecs. Traités théoriques-récits historiques*, Paris 1867, 69-119.
- Klet. Phil.* = *Kleitorologion* of Philotheos, in OIKONOMIDIS, *Listes*, 81-235.
- LIO, *Tact.* = 1) complete ed., *Leonis imperatoris tactica*, PG 107, 672-1120, 2) partial edn. R. Vári, *Leonis imperatoris tactica* I (proem., const. i-xi); II (const. xii-xiii, xiv, 1-38), *Sylloge Tacticorum Gracorum III*, Budapest 1917-1922.
- Naumachica = A. DAIN, *Naumachica*, Paris 1943.
- NICPHL., *Tact.* = Nicephorus Ouranos, *Tactica*; chapters 56-65 in E. McGIER, *Sowing the Dragon's Teeth*, 88-163 (text), 165-167 (notes); chapters 63-74 in J.-A. DE FOUCOURT, 'Douze chapitres inédits de la *Tactique de Nicéphore Ouranos*', *TM* 5, 1973, 281-312.
- Praecepia = E. McGIER, *Sowing the Dragon's Teeth*, 3-59 (text), 61-78 (notes); see also I. KUTAKOWSKI, *Nicephori Praecepta militaria e codice Mosquensi*, in *Zapiski Imperatorskoj Akademii Nauk*, viii ser., 7, 1908.
- Strat. = *Das Strategikon des Maurikios*, ed. G.T. Dennis, trans. F. Gamillscheg, CFHB 17, Vienna 1981.
- Syll. Tact. = A. DAIN, *Sylloge Tacticorum, quae olim 'inedita Leonis Tactica' dicebatur*, Paris 1938.
- Three Treatises = J.F. HALDON, *Constantine Porphyrogenitus. Three Treatises on Imperial Military Expeditions*, CFHB 28, Vienna 1990.

STUDIES

- AIRWELLER, *Mer* = H. AIRWELLER, *Byzance et la mer: la marine de guerre, la politique et les institutions maritimes de Byzance aux VII^e-XI^e siècles*, Paris 1966.
- AIRWELLER, 'Recherches' = H. AIRWELLER, 'Recherches sur la société byzantine au XI^e siècle: nouvelles hiérarchies et nouvelles solidarités', *TM* 6, 1976, 99-124.
- BROKAAR, 'Basil Lacapenus' = W.G. BROKAAR, 'Basil Lacapenus. Byzantrium in the Tenth Century', in *Studia Byzantina et Neohellenica Nederlandica*, W.E. Bakker, A.F. Van Gemert, W.J. Aerts eds., *Byzantina Nederlandica* 3, Leiden 1972, 199-234.

- BRYER, WINFIELD, *Pontos* = A.A.M. BRYER, D. WINFIELD, *The Byzantine Monuments and Topography of the Pontos*, DOS 20, Washington D.C. 1985.
- BURY, *Administrative System* = J.B. BURY, *The Imperial Administrative System in the Ninth Century with a revised text of the Kletorologion of Philotheos*. British Academy Supplemental Papers 1, London 1911.
- BURY, 'Ceremonial Book' = J.B. BURY, 'The Ceremonial Book of Constantine Porphyrogenitus', *English Historical Review* 22, 1907, 209-227, 417-439.
- CHIAVADDI, 'Artillery in late Antiquity' = P.F. CHIAVADDI, 'Artillery in late Antiquity: prelude to the Middle Ages', in *The Medieval City under Siege*, I.A. Corfis, M. Wolfe eds., Woodbridge 1995, 131-173.
- CHYNET, 'Les effectifs' = J.-C. CHYNET, 'Les effectifs de l'armée byzantine aux Xe-XIV^e s.', *Cahiers de civilisation médiévale*, V-XIV^e siècles 38/4, 1995, 319-335.
- CHRISTIDES, *Conquest of Crete* = V. CHRISTIDES, *The Conquest of Crete by the Arabs (ca. 824). A Turning Point in the Struggle between Byzantium and Islam*, Athens 1984.
- CHRISTIDES, 'Raids of the Moslems' = V. CHRISTIDES, 'The raids of the Moslems of Crete in the Aegean Sea: piracy and conquest', *Byz.* 51, 1981, 76-111.
- DAGRON, MIHĂESCU, *Le traité sur la Guérilla* = G. DAGRON, H. MIHĂESCU, *Le traité sur la Guérilla (De velitatione) de l'empereur Nicéphore Phocas (963-969)*. L'œuvre établie par G. Dagron et H. Mihaescu, trad. et comm. par G. Dagron, Paris 1986.
- DAWES, 'Roman Military Diet' = R.W. DAWES, 'The Roman Military Diet', *Britannia* 2, 1971, 122-142.
- DENNIS, *Three Byzantine Military Treatises* = G.T. DENNIS, *Three Byzantine Military Treatises*. Text, trans. and notes, CFHB 25 = DOT 9, Washington D.C. 1985.
- DILLEN, *Ethische Verschiebungen* = H. DILLEN, *Ethische Verschiebungen zwischen der Balkanhalbinsel und Kleinasiens vom Ende des 6. bis zur zweiten Hälfte des 9. Jahrhunderts*, Berliner Byzantinische Arbeiten 59, Berlin 1993.
- DOIGER, *Beiträge* = F. DOIGER, *Beiträge zur Geschichte der byzantinischen Finanzverwaltung besonders des 10. und 11. Jahrhunderts*, Byzantinisches Archiv 9, Munich 1927/Hildesheim 1960.
- EICKHOFF, *Seekrieg* = E. EICKHOFF, *Seekrieg und Seepolitik zwischen Islam und Abendland*, Berlin 1966.
- FAIKENHAUSEN, *Untersuchungen* = V. VON FAIKENHAUSEN, *Untersuchungen über die byzantinische Herrschaft in Süditalien vom 9. bis ins 11. Jahrhundert*, Wiesbaden 1967.
- HALDON, *Byzantine Praetorians* = J.F. HALDON, *Byzantine Praetorians: an Administrative, Institutional and Social Survey of the Opsikion and Tagmata, c.580-900*, Poikila Byzantina 3, Bonn 1984.
- HALDON, *Byzantium in the Seventh Century* = J.F. HALDON, *Byzantium in the Seventh Century: the Transformation of a Culture*, Cambridge 1997.
- HALDON, 'Military Service' = J.F. HALDON, 'Military Service, Military Lands and the Status of Soldiers: Current Problems and Interpretations', *DOP* 47, 1993, 1-67 (repr. in ID., *State, Army and Society in Byzantium: Approaches to Military, Social and Administrative History, 6th-12th Centuries*, Aldershot 1995, VII).
- HALDON, 'Organisation and Support' = J.F. HALDON, 'The Organisation and Support of an Expeditionary Force: Manpower and Logistics in the Middle Byzantine Period', in *Tō ἐμπόλεμο Bučávto (Byzantium at war)*, N. Oikonomides ed., Athens 1997, 111-151.
- HALDON, 'Recruitment and Conscription' = J.F. HALDON, 'Recruitment and Conscription in the Byzantine Army c.550-950: A Study on the Origins of the stratotika ktemara', *Sitzungsber. d. österr. Akad. d. Wiss., phil.-hist. Kl.* 357, Vienna 1979.
- HALDON, *Three Treatises* = J.F. HALDON, *Constantine Porphyrogenitus. Three Treatises on Imperial Military Expeditions*, CFHB 28, Vienna 1990.
- HINDY, *Studies* = M.F. HINDY, *Studies in the Byzantine Monetary Economy c.300-1450*, Cambridge 1985.

- JEFFREYS, PRYOR, *Dromon* = E. JEFFREYS, J. PRYOR, *The dromon: terminology and reality*, DOS (forthcoming), Washington D.C.
- JONES, *LRE* = A.H.M. JONES, *The Later Roman Empire 284-602. A Social Economic and Administrative Survey*, Oxford 1964.
- KAHANI, 'Sprache' = H. and R. KAHANI, 'Abendland und Byzanz III. Literatur und Sprache. B. Sprache', in *Reallexikon der Byzantinistik* A 1, fasc. 4-6, 1970-1976, 345-640.
- KAHANI, TIEZI, *Lingua Franca in the Levant* = H. and R. KAHANI, A. TIEZI, *The Lingua Franca in the Levant. Turkish Nautical Terms of Italian and Greek Origin*, Urbana, Ill. 1958.
- KOLIAS, *Byzantinische Waffen* = T. KOLIAS, *Byzantinische Waffen*, Byzantina Vindobonensis 17, Vienna 1988.
- KOLIAS, 'Eßgewohnheiten' = T. KOLIAS, 'Eßgewohnheiten und Verpflegung im byzantinischen Heer', in *Byzantios. Festschrift für Herbert Hunger zum 70. Geburtstag*, W. Hörandner, J. Koder, O. Kresten, E. Trapp eds., Vienna 1984, 193-202.
- KOUKOULIS, *BBP* = Ph. KOUKOULIS, *Βυζαντινὸν βίος καὶ πολιτισμός*. 1-6, Athens 1948-1951.
- KOUKOULIS, 'Onomata' = Ph. KOUKOULIS, "Όνόματα καὶ εἶδη ὄρτων κατὰ τοὺς Βυζαντινοὺς χρόνους", *EEBS* 5, 1928, 36-52.
- KOUKABA-DIMITROU, 'Ο γεωγραφικός κόσμος' = B. KOUKABA-DIMITROU, 'Ο γεωγραφικός κόσμος Κωνσταντίνου τοῦ Πορφυρογεννήτου. II: Η Εικόνα', Athens 1993.
- KUHN, *Byzantinische Armee* = H.-J. KUHN, *Die byzantinische Armee im 10. und 11. Jahrhundert. Studien zur Organisation der Tagmata*, Byzantinische Geschichtsschreiber, Ergänzungsband 2, Vienna 1991.
- LAURENT, *Corpus* = V. LAURENT, *Le Corpus des sceaux de l'empire byzantin*, II: *l'administration centrale*, Paris 1981, V: *L'Église*, Paris 1963.
- LEWIS, *Naval Power* = A.R. LEWIS, *Naval Power and Trade in the Mediterranean A.D. 500 to 1100*, Princeton 1951.
- MAKRYPOULIAS, 'The Navy' = C.G. MAKRYPOULIAS, 'The Navy in the Works of Constantine Porphyrogenitus', *Græco-Arabica* 6, 1995, 152-171.
- MALAMUT, *Les îles* = É. MALAMUT, *Les îles de l'empire byzantin. VII^e-XI^e siècle*, I-II, Byzantina Sorbonensis 8, Paris 1988.
- MARSDEN, *Greek and Roman Artillery* = E.W. MARSDEN, *Greek and Roman Artillery. Historical development*, Oxford 1969.
- Mc GIER, *Sowing the Dragon's Teeth* = E. Mc GIER, *Sowing the Dragon's Teeth. Byzantine Warfare in the Tenth Century*, DOS XXXIII, Washington D.C. 1995.
- MIQUTI, *Géographie* I-II = A. MIQUTI, *La géographie humaine du monde musulman jusqu'au milieu du XI^e siècle. Géographie et géographie humaine dans la littérature arabe des origines à 1050*, I, Paris 1967; II, Paris 1975.
- NESBITT, OIKONOMIDES, *DOSeals* I-II = J. NESBITT, N. OIKONOMIDES, *Catalogue of Byzantine Seals at Dumbarton Oaks and at the Fogg Museum of Art*, I, Washington D.C. 1991; II, Washington D.C. 1994.
- OIKONOMIDES, *Listes* = N. OIKONOMIDES, *Les listes de présence byzantines des IV. -V^e siècles*, Paris 1972.
- OIKONOMIDES, 'Organisation' = N. OIKONOMIDES, 'L'organisation de la frontière orientale de Byzance aux IV-VI^e siècles et le taktrikon de l'Escorial', in *Actes du XIV^e Congrès International des Études Byzantines* I, Bucarest 1974, 285-302 (repr. in Id. *Documents et études sur les institutions de Byzance VI^e-XI^e s.J.* London 1976, XXIV).
- OIKONOMIDES, 'Social structure' = N. OIKONOMIDES, 'The social structure of the Byzantine countryside in the first half of the Xth century', *Symmetra* 10, 1996, 105-125.
- PANCHINKO, 'Katalog Molybdoboullov' = B.A. PANCHINKO, 'Kollektsii Russkago Arkheologicheskago Instituta v Konstantinopole, Katalog Molybdoboullov', *IRAIK* 8, 1903, 199-246; 9, 1904, 341-396; 13, 1908, 78-151.

- PRYOR, *Geography, Technology and War* = J. PRYOR, *Geography, Technology and War. Studies in the maritime history of the Mediterranean, 649-1571*, Cambridge 1988, 102-111.
- PRYOR, 'Naval architecture' = J. PRYOR, 'The naval architecture of Crusader transport ships and horse transports revisited', *Mariners' Mirror* 76, 1990, 255-273.
- PRYOR, 'Transportation' = J.H. PRYOR, 'Transportation of Horses by Sea during the Era of the Crusades: Eighth Century to 1285 A.D.', *Mariners' Mirror* 68, 1982, 9-27, 103-125.
- RAMSAY, *Historical Geography* = W.M. RAMSAY, *The Historical Geography of Asia Minor*, Royal Geographical Society, Supplementary Papers IV, London 1890/Amsterdam 1962.
- RUNCIMAN, *Romanus* = S. RUNCIMAN, *The Emperor Romanus Lecapenus. A Study on Tenth-Century Byzantium*, Cambridge 1929.
- SCHÜLBACH, *Metrologie* = E. SCHÜLBACH, *Byzantinische Metrologie*, Handbuch d. Altertumswiss. xii, 4 = Byz. Handbuch iv. Munich 1970.
- SCHLÜMBERGER, 'Inédits' = G. SCHLÜMBERGER, 'Sceaux byzantins inédits', ser. i, ii, iii, in *Mélanges d'Archéologie byzantine*, Paris 1885, 199-274; iv, in *REG* 13, 1900, 467-492; v, in *RN* 9, 1905, 321-354; vi, in *RN* 20, 1916, 32-46.
- SCHLÜMBERGER, *Sig.* = G. SCHLÜMBERGER, *Sigillographie de l'Empire byzantin*, Paris 1884.
- SULLIVAN, 'Tenth-Century Byzantine Offensive Siege Warfare' = D. SULLIVAN, 'Tenth-Century Byzantine Offensive Siege Warfare: instructional prescriptions and historical practice', in *Tὸ ἐμπόλεμο Βυζάντιο (Byzantium at war)*, N. Oikonomides ed., Athens 1997, 179-200.
- TEAH, 'Grain Supply' = J.L. TEAH, 'The Grain Supply of the Byzantine Empire', *DOP* 13, 1959, 87-139.
- TREADGOLD, *Byzantine Revival* = W.T. TREADGOLD, *The Byzantine Revival, 780-842*, Stanford 1988.
- TREADGOLD, *Byzantium and its Army* = W.T. TREADGOLD, *Byzantium and its Army 284-1081*, Stanford 1995.
- TREADGOLD, 'Notes' = W.T. TREADGOLD, 'Notes on the Numbers and organisation of the Ninth-Century Byzantine Army', *GRBS* 21, 1980, 269-288.
- TREADGOLD, *State Finances* = W.T. TREADGOLD, *The Byzantine State Finances in the Eighth and Ninth Centuries*, Eastern European Monographs CXXI, New York 1982.
- TREADGOLD, 'The Army' = W.T. TREADGOLD, 'The Army in the Works of Constantine Porphyrogenitus', *RSBN* ns. 29, 1992, 77-164.
- TURTELLIOU, 'The true size' = H. TURTELLIOU, 'The true size of a post-Justinianic army', *Byzantine Studies/Études byzantines* 10, 1983, 216-222.
- VASILIA, CANARD, *Byzance et les Arabes* = A.A. VASILIA, *Byzance et les Arabes i: La dynastie d'Amorium (820-867)*; ii, 1 & 2: *Les relations politiques de Byzance et des Arabes à l'époque de la dynastie macédonienne (les empereurs Basile I, Léon le Sage et Constantin VII Porphyrogénète) (867-959)*, éd. fr. H. Grégoire, M. Canard, Corpus Bruxellense Hist. Byz. I, II, Bruxelles 1950, 1968.
- WINKELMANN, 'Probleme der Informationen' = E. WINKELMANN, 'Probleme der Informationen des al-Garmi über die byzantinischen Provinzen', *BSI* 43, 1982, 18-29.
- ZACOS, VIGLIERY = G. ZACOS, A. VIGLIERY, *Byzantine Lead Seals*, vol. I, parts 1-3, Basel 1972.

Addendum. — Since this paper was completed, the following items have appeared which are relevant to the discussion : on the tenth-century Byzantine treatises on siege-warfare, see now D. SULLIVAN, *Siegecraft: two tenth-century instructional manuals by "Hero of Byzantium"*, Washington D.C. 1999; on siege-machines, and in particular on the complex history of the trebuchet, see now G.T. DENNIS, 'Byzantine heavy artillery : the helepolis', *GRBS* 39, 1998, 99-115, who argues that the term *helepolis* referred in fact in Byzantine texts to traction-trebuchets; P. CHEVRIER, 'The hybrid trebuchet: the halfway step to the counterweight trebuchet', in D.J. Kagay, T.M. Vann, eds., *On the social origins of medieval institutions. Essays in honor of Joseph O'Callaghan*, Leiden 1998, 179-222.

INDEX

Certain 'irregular' spellings have been allowed to stand when the scribe's usage is consistent,
e. g. γαλεο, not γαλαιο or γάλεο as in Trapp's Lexicon.

1. PERSONAL NAMES

- Ατενούλφος: **44**, 166
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